

# FLIGHT

&  
The AIRCRAFT  
ENGINEER.

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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## Flight

and The Aircraft Engineer.

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## EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."

(Sir Auckland Geddes, Minister of National Service.)



THE maxim which has become current, that in time of war we must prepare for peace, may be trite but it is nevertheless perfectly true. It is being urged upon us all round by all sorts of people from real thinkers to the Government that we should now begin to prepare for the industrial and commercial war which will follow the present military conflict as inevitably as day follows night.

### Excess Profits and the Industrial Future.

We have had ample warning of what is going to happen in the post-war future. Dr. Page, the American Ambassador, recently told us that later on his countrymen would lead us a merry race for our trade and money. He was speaking to the Commercial Committee of the House of Commons which greeted his remark with laughter! Had he been talking to a gathering of business men, instead of to politicians, we doubt if the seriousness of the remark would have provoked

even a smile. Rather would it have caused the audience to ponder very gravely upon the position in which the crass financial policy of the present Government is likely to leave the commercial community by the end of the war, and upon the chances which British industry, crippled by inordinate taxation, will have of holding its own against others properly equipped for the coming struggle.

We agree that it is, superficially at any rate, a good thing that we should as far as possible pay for the war out of revenue. The doctrine that we should not leave to posterity the burden of debt which the war has laid upon us is good so far as it goes. But there is at least a partial counter to that, inasmuch as we are beyond all question fighting this war in the interests of posterity equally with our own and it is arguable that if the costs are too heavy for us to bear without grave risk of crippling our future—and that of posterity—it is sound policy to leave to the latter a share of the responsibility as well as the benefits. Indeed, we believe it is demonstrable that posterity is likely to suffer very grievously from the attempt to make the present and next generations shoulder a burden that is too heavy to be carried by our available resources. It has undoubtedly been a weakness of our conduct of the war that the Governments which have been in power have taken too rosy a view of our resources in man-power, in material, and in money. There has been too great a tendency to regard Britain herself as an inexhaustible reservoir of all the necessities of war. We have spent money like water on our own preparations and have not taken the slightest trouble to see that we obtained even reasonable value for our expenditure. We have advanced money with a lavish hand to all our Allies, with the exception of the United States which is now a heavy creditor. We have recklessly called into the fighting forces of the Crown men who were excellent civilians but useless as soldiers, ruined their businesses and destroyed their potentialities as tax-payers, and all with a light heart as though it mattered not at all. We have crippled the future of industry by an inordinate and in many instances criminally unjust tax on profits, which is likely to leave British commerce without a feather to fly with when the war is over and we have to face the war of commercial competition. No other belligerent has taxed industry as we have done. Germany, whose war bill is nearly equal to our own, has not taxed profits, with the result

that her industries have been enabled to pile up huge sums of money as capital for the post-bellum struggle for commercial supremacy. Not even the income tax has been increased by Germany, while our own has sailed up to a figure which, excess profits tax apart, we should have thought fantastic five years ago.

There is an aspect of this excessive taxation to which we have not seen attention called. That is the recklessness of expenditure engendered in those who have to pay the enormous imposts which are levied under the name of excess profits and income tax. We were talking the other day to a well-known business man in his private office, and mentioned that we noticed certain alterations had been carried out. He agreed that they had, and said that they added to his comfort but were really quite unnecessary, and were it not that 80 per cent. of the cost came out of his taxes they would not have been made. It is true that according to some super-sensitive auditors, this is not legitimate. Nevertheless that sort of thing is going on all round, and it is producing a most undesirable effect, for there is nothing that so soon becomes an ineradicable habit as the spending of money. It is an unhealthy condition of things, even though it be a comparatively minor evil in relation to the greater issues. But it is nevertheless symptomatic of the carelessness with which we have come to regard all matters of finance. There is plenty of money afloat—everyone has it, except the unfortunate middle-class who have made nothing out of the war and are called upon to pay through the nose for everything—and Government and people alike have ceased to regard it as having any value. But all these are side issues compared with that of the post-war situation of industry, shorn by super-taxation of the wherewithal to carry out the necessary work of reconstruction. We see no hope of the Government abandoning its present methods of "sound" finance, which are storing up endless trouble and difficulty for the future, and we can only view that future with profound apprehension.

#### The British Machine Tool Industry.

Very closely related to the production of aircraft as it is, the machine tool industry of Britain has been the subject of considerable discussion of late among those who are taking a principal part in its development. In this connection we have before us a most interesting paper read recently by Mr. J. Judson, in Birmingham. Tracing the history of the British machine tool industry during the past quarter of a century, the writer of the paper pointed out that the business has been sadly neglected. Whereas 30 years ago we were well in front of the rest of the world, in the interim we have easily been passed by both America and Germany. This has brought about the position that of the machinery needed to construct an aero engine from 70 per cent. to 80 per cent. is of foreign origin. It is the same in connection with the manufacture of rifles, machine guns, motor cars, typewriters, sewing machines—anything, in fact, into which automatic and semi-automatic processes enter in the course of that manufacture. Now, if it were a question of exchange, so to say, and we could export to foreign countries such machine tools as they cannot make for themselves, the position would not be so bad. It is a fact, however, that both in Germany and in America all these processes are carried

out by machinery made in the country. It is not very far short of being literally true to say that neither imports a single machine tool from outside. As an example of the magnitude of the German industry, the writer stated that the value of the machine tools made in Germany in 1917 was £40,000,000. The value of our own output—achieved under stress of war and the necessity for a great output—he estimated at about a quarter of that sum! As to pre-war figures, the Germans in 1912 exported machine tools to the value of £3,000,000, while the value of our own exports was less than £750,000 in 1912.

Now, it is abundantly clear that, apart altogether from any questions affecting our industrial position in relation to other countries, one of the first essentials of Imperial defence is a solidly established machine tool industry. Modern war is very largely machine-made, as we found before the great conflict was two months old. By the end of 1914 we were faced with the need for extending and fully equipping our machine shops to cope with an enormous and quite unforeseen demand for guns and shells and all the paraphernalia of twentieth-century war. Obviously, the prime necessity was machine tools wherewith to equip our new and extended munition factories, and to do that with nothing to help but a semi-moribund industry which had fallen hopelessly behind our principal enemy. We were, therefore, compelled to rely mainly on America for the tools we needed. We got them, as it happened, but it might easily have been that we should not for any one of a number of obvious reasons. If we had not, it does not require any great depth of vision to see that our neglect of an essential industry would have lost us the Empire, for without machine tools we could never have produced the material necessary for the conduct of the war and we must have been beaten.

Why, then, has so important an industry, in which we once held an easy lead, been so neglected? Is it that British brains and British inventiveness are so inferior that we were incapable of holding our own? We refuse to believe it. Or was it due to our fiscal system, which freely admitted foreign machine tools to our market to compete on the most favourable terms with our own products the while the latter were penalised beyond hope of effective competition in the foreign markets? It may be that here is the root cause. At least it is fit subject for reflection. But whatever the reason, it is for the machine tool industry of this country to see that such measures, fiscal or other, as are necessary to re-establish it as one of our basic trades are taken at once in preparation for post-war conditions—as soon as the Government can be persuaded to state what the trade policy of this country is to be after the war.

#### Raiding Frankfort.

As if in response to what was written in a number of British journals—including "FLIGHT"—Frankfort was raided the other day and a considerable weight of bombs dropped on the headquarters of cosmopolitan finance. And a very salutary effect it appears to have had. The egregious Wilhelm, apparently with the feeling that it was up to him to show cheap sympathy with the town to which he mainly looks to make his recurrent war loans a success, has indulged in crocodile tears at the iniquity of the hated British in bombing an "open town!" We confess to a feeling of intense



satisfaction that the Kaiser himself should have thus subscribed to the doctrine that open towns should be sacred from attack. It is one that was universally accepted here before the Hun made it clear that he was not troubled with any qualms of conscience or that merely sentimental considerations were not to be allowed to weigh against any policy that seemed likely to assist in beating the Allies. For long enough after that became quite clear we refrained from repayment in kind, but at last we were driven to a policy of reprisals which is now working very well indeed and may be expected to do even better before long. We agree that it is a pity that open towns should be singled out for attack, but in all the circumstances we cannot see how it is to be avoided now. Supposing we were to reverse our policy now and call off all air raids on the Rhineland towns. What would be the immediate result? Undoubtedly that there would be a strong recrudescence of air raids on London and other of our towns and cities, because of the release of the Hun machines which, in deference to the popular clamour, have been detached for the defence of the Rhine cities. We may be very certain indeed that, were we to do so and state that we were acting from conviction that the bombing of towns behind the lines was dirty business, the Hun would simply laugh at us for fools who do not know a good thing when we have it and would immediately betake himself to his old practices.

We have always, since we became converted to the policy of reprisal raids, argued that the best defence of London and the rest of our cities was in attacking the Hun at home. How correct that argument is may be seen in almost complete immunity from raids we have enjoyed since our bombing squadrons became really busy among the Rhine cities. We are not so foolish as to lay it down that we have done with German raids on London, but the proof of the pudding is in the eating thereof and we have seen that, thanks to our greatly improved methods of defence and particularly to that best of defences, a continuous offensive, we have been left alone for months. We

shall be visited again by the unwelcome raiders of the night, but the main bottom has certainly been knocked out of the Huns' aerial offensive against these islands.

#### The Status of War Decorations.

The Army Council has just announced that for the future the D.S.O., the Military Cross, and the D.C.M. will be awarded for "services in action" only. The term "services in action" is defined as follows:—

- (i) Service under fire.
- (ii) Distinguished individual services in connection with air raids, bombardments, or other enemy action, which at the time produces conditions equivalent to services in actual combat, and demands the same personal elements of command, initiative, or control on the part of individuals and, in a lesser degree only, possibly entails the same risks.

In no circumstances will any exception to this rule be allowed.

Undoubtedly the action of the Army Council, which, by the way, concerns Army awards alone, will meet with general approval from the Army itself as well as with that of the public at large. So far as concerns the M.C. and the D.C.M. it has always been clear that these were in the nature of rewards for personal gallantry and it is but right and proper that they should be given in accordance with the terms of their constitution. The D.S.O. is, however, in a somewhat different category. It is an Order instituted to reward "distinguished service," as its name fully indicates, and it is quite possible—indeed, it often happens—that distinguished service may be rendered a long way behind the firing line. We do not for a moment question the propriety of the Army Council's ruling in the matter. On the contrary, we entirely agree with it, but at the same time we venture to point out that it causes a hiatus, in that officers whose distinguished service is not actually rendered in the face of the enemy will be deprived of their just reward and distinction. To reward such services as we have in mind with the O.B.E. is possible, but we would much prefer to see that justly abused Order kept for purely civilian services. In order to make



Ministry of Information.

**THE KING'S VISIT TO THE WESTERN FRONT.**—His Majesty inspecting some C.O.s. of our squadrons at the Front.

everything fair and equitable, the Army Council might do a great deal worse than follow the example of the Air Ministry and institute a special decoration, analogous to the Air Force Cross, for services rendered behind the actual battle area. That seems to be the best way out of what has really become an anomalous position.

## Deaf Mutes as Aviators.

According to the New York correspondent of Reuter, American army officers believe that they have discovered the ideal air-fighter in the deaf mute. As a result of aviation tests made with recent graduates of a local institution for the deaf and dumb, it is thought possible that the War Department may authorise the enrolment of deaf mutes in the flying service, and that a new field of war endeavour will be opened to thousands of young men throughout the country.

The deaf have no sense of motion, it is stated, If they lose the sense of hearing, after once having possessed it, they cannot tell, for instance, whether they are swinging in a hammock or whether it is stationary. They never become seasick or dizzy in high altitudes, and they lose all sense of dread, such as is experienced by normal persons. The explosions of aeroplane engines are entirely unheard by the mutes, although in all other respects they are exactly as

keen as anyone. Added concentration, it is stated, is obtained by the deaf aviators, because of their inability to hear the engine explosions, and lack of dizziness renders them particularly intrepid almost immediately they take to the air.

The idea is at first sight rather a startling one, but when we come to examine it there seems to be something in it, though we should not like to commit ourselves off-hand to a total acquiescence in the theory. The reasons why the deaf mute is said to make the ideal aviator are set forth at length and would appear to be conclusive, so far as they go. Whether our own authorities are likely to pursue the line of investigation opened by the Americans we cannot say, but if the facts are as stated it certainly ought to be followed up. The deaf mute is the unfortunate subject of a terrible handicap in life, and we have never before seen a statement the effect of which is that his handicap, so far from being a disadvantage, is distinctly the other way. Not only in war service will there be a wide field of usefulness for those afflicted in this way, but in the development of peace time flying there will be opened up a path of activity in which they will be of supreme use to the State—provided the American thesis can be sustained. Nor do we see why it should not. There are no counter reasons that we can see, though, of course, this is eminently one of the cases in which the proof of the pudding is in the eating thereof.

## Changes in the Air Council.

It was announced on August 24th that His Majesty the King has approved the appointment of Maj.-General Sir Godfrey Paine, K.C.B., M.V.O., to the post of Inspector-General of the Royal Air Force; and, under the powers conferred by the Order in Council dated May 11th, 1918, the Secretary of State for the Royal Air Force has appointed Sir Godfrey Paine to be an additional member of the Air Council.

His Majesty the King has appointed Maj.-General W. S. Brancker to be Master-General of Personnel, in the place of Maj.-General Sir Godfrey Paine.

His Majesty has also appointed Maj.-General E. L. Ellington, C.M.G., to be Controller-General of Equipment and a member of the Air Council, in the place of Maj.-General Brancker.

## Uniform for R.A.F.

THE Air Ministry announces that a light blue uniform has been approved for Warrant Officers, N.C.Os. and Airmen of the Royal Air Force. Some months must elapse before the new uniform can be generally provided, but khaki uniform of R.A.F. pattern will shortly be available, and will gradually be replaced by blue uniform. The following is the description of the uniform for rank and file:—

**Cap.**—Warrant Officers, 1st Class.—Light blue whipcord crown, band of black braid, black glazed peak, and chin strap. Other ranks.—Crown of light blue proofed serge, band of black braid, black glazed peak, and chin strap.

**Cap Badge.**—Warrant Officers, 1st Class.—As for officers, but of gilding metal. Warrant Officers, 2nd Class, and N.C.Os.—Bird encircled by ring, surmounted by crown, in gold embroidery on black velvet. Other ranks (1st, 2nd, and 3rd Class A./M.).—As for 2nd Class Warrant Officers and N.C.Os., but in light blue silk embroidery.

**Jacket.**—Warrant Officers, 1st and 2nd Class, Flight Sergeants and Sergeants.—Light blue serge of rank and file texture, officers' pattern, except for hip pockets, which are slit with flaps; buckle of gilding metal with two prongs; buttons of gilding metal, flat, with device of bird surmounted by crown. Other ranks.—As for rank and file in the Army; stand and fall collar; no slits in skirt; military patch breast pockets; belt with two-prong buckle, as for warrant officers and sergeants.

**NOTE.**—Warrant officers, flight sergeants and sergeants will wear silver grey flannel shirts and collars, and black cotton ties.

**Trousers.**—All ranks.—Light blue tartan serge.

**Pantaloon.**—All ranks.—Light blue tartan serge without strappings.

**Boots.**—All ranks.—Black ankle boots of present pattern.

**Great Coat.**—All ranks.—Details to be notified later.

**Distinguishing Badges.**—All ranks, other than warrant officers, 1st Class, will wear the device of a bird in light blue silk embroidery on a dark blue ground on both sleeves of jacket and great coat immediately below the shoulder seam. Wireless mechanics will wear in addition the "Hand and Thunderbolt" device immediately under the bird.

## Badges of Rank.

**Warrant Officers, 1st Class.**—The Royal Arms in light silk (blue) embroidery, worn on both sleeves of jacket and great coat below the elbow.

**Warrant Officers, 2nd Class.**—Crown in light blue worsted embroidery on both sleeves below elbow.

**Flight Sergeants.**—Three chevrons and crown of light blue worsted embroidery.

**Corporals and Sergeants.**—Two and three chevrons respectively of light blue worsted embroidery.

**1st Class Mechanics.**—Two-bladed propeller of light blue worsted embroidery worn immediately under the bird.

## Aerial Posts in Morocco.

IN connection with the inauguration of aerial mails in France, it is pointed out that for over a year aeroplanes have been officially used in Morocco for linking up the various units. Each sub-division has a squadron at its disposal, the airmen ensuring a service between the chief town of the sub-division and distant outposts. They carry the ordinary mails, urgent despatches, and telegrams impossible to send by wire. Finally, they see that certain posts are kept in funds. All these activities are carried out automatically, without interfering with the normal service of the bombing, photographic, and patrol squadrons. It is suggested that in future it might be possible, by means of an agreement between the Morocco Protectorate and the Government of Algeria, to establish aerial postal communication with the great North African colony, which would benefit no less than Morocco by the economy in time and expense thus assured.

## The American Air Service.

THE report of the Committee of the American Senate appointed to investigate the delays in aircraft production in the States, although it comments in scathing terms on the failures, says that the report must not be taken as a condemnation of the American air programme:—

"Much has been accomplished. The Committee are glad to report that, whereas it is believed that there are many things to be remedied, nevertheless we are approaching a period when quantity production of planes may be hoped for."

In urging the necessity for one-man control the Committee recommend the formation of an Air Department very much on the lines of the British Air Council, with a representative in the Cabinet.



# HONOURS

## "Mentioned" for Work in S.W. Africa.

It was announced in a supplement to the *London Gazette* on August 22nd :—

The Secretary of State for the Colonies has received from the Governor-General and Commander-in-Chief, Union of South Africa, the following list of officers and other ranks whose names have been brought to notice by General the Rt. Hon. Louis Botha for distinguished service in connection with the campaign in German South-West Africa, 1914-5 :—

ROYAL NAVAL ARMOURD CARS.—Whittall, Lt.-Comdr. W.; Cornell, P.O. J.

ROYAL AIR FORCE.—Batten, Lt. (T. Capt.) H. V.; Creed, Lt. (T. Capt.) G. S., Permanent Force (Staff); Hinshelwood, Sub-Lt. T., R.N.A.S.; Van Der Spuy, Lt. (T. Capt.) K. R., M.C., Permanent Force (Staff); Wallace, Capt. (T. Major) G. P., D.S.O., Permanent Force (Staff).

## Details of Gallant Deeds.

With reference to the awards conferred as announced in the *London Gazette*, March 26th, the following are the statements of service for which the decorations were conferred :—

### Distinguished Service Order.

Lieut. (T. Capt.) G. H. BOWMAN, M.C., R. War. R., Spec. Res., and R.F.C.—He has recently destroyed six enemy aeroplanes and driven down others out of control. He has at all times shown splendid courage and determination, and by his leadership and good example has contributed largely to the success of his squadron.

Capt. R. M. DRUMMOND, M.C., R.F.C.—While escorting a reconnaissance, on three hostile planes being encountered he at once attacked and drove down one of these, although he was being himself attacked in the rear by the remaining two. Drawing these latter away from the reconnaissance machine, he turned, attacked, and followed one of these down to a lower altitude, despite heavy anti-aircraft fire. This machine was then seen to strike the ground and turn over. He then attacked the third machine, and, after a long burst of fire at close range, both wings of the enemy plane were observed to collapse in the air. The whole action was characterised by the great skill and daring of this officer.

### Bar to the Military Cross.

Capt. W. E. MOLESWORTH, M.C., R. Muns. Fus. and R.F.C.—He has done excellent work as patrol leader, handling his formations with great skill and courage. He has destroyed four enemy machines and driven several down out of control.

T. Capt. F. G. SAUNDERS, M.C., R.F.C.—On three separate occasions during a month he has fought a hostile machine, pursued it over the enemy's lines and driven it down to earth, where it was completely wrecked. He has shown the most consistent gallantry and skill in action.

Lieut. R. M. SMITH, M.C., Aust. Light Horse R. and Aust. F.C.—He was one of the two pilots who carried out a remarkable series of photographs in one flight, completely covering an important area of 45 square miles. On a later occasion he successfully bombed an important bridge head from a low altitude, and his work throughout, as well as his photography, has been invaluable and characterised by the most consistent gallantry.

### The Military Cross.

T. Lieut. R. A. GEORGE, Gen. List and R.F.C.—He has done valuable work in ranging batteries, bombing at night, and in attacking enemy troops with machine-gun fire, often under the most adverse weather conditions. On one occasion he ranged a siege battery on a hostile battery, destroying four of its gunpits and causing fires and explosions. His splendid example has been an inspiration to his squadron.

T. Lieut. G. E. GIBBS, R.F.C.—On one occasion he pursued an enemy aeroplane to a very low altitude over the enemy lines and succeeded in driving his opponent to the ground. On a later occasion he and another pilot fought a hostile machine to within 200 feet of the ground over hostile territory where it fell, completely wrecked. He has displayed consistent gallantry and determination in action.

T. Capt. T. GRAN, Gen. List and R.F.C.—He bombed enemy aerodromes with great success and engaged enemy searchlights, transport and other targets with machine-gun fire. He invariably showed the greatest determination and resource.

Temp. Sec. Lieut. R. W. HOBBS, S. Wales Bord. and R.F.C.—He carried out many reconnaissances always flying a long distance over the enemy's lines or over entirely new country. He invariably obtained successful photographs and brought back valuable information. He showed great keenness and determination at his work.

Temp. Capt. R. K. KIRKMAN, Gen. List and R.F.C.—He led a patrol of 11 aeroplanes, and through his skilful manoeuvring and leadership the patrol destroyed four enemy scouts and drove down three more out of control. On several other occasions he has driven down and destroyed hostile machines, and always set a fine example of courage and determination.

Lieut. R. S. LARKIN, R.F.C., S.R.—On long-distance bomb raids, he successfully bombed enemy aerodromes and railway communications on several occasions, and his skill and determination in reaching his objectives, frequently under adverse weather conditions, were a splendid example to the squadron. On one occasion, though his machine was partially disabled by anti-aircraft fire, he reached his objective and obtained a direct hit.

Sec. Lieut. (Temp. Capt.) K. M. St. C. G. LEASK, Devon R. and R.F.C.—In leading offensive patrols against superior numbers of the enemy, his patrol twice engaged more than double their own numbers and drove the enemy back into their own lines. He drove down three enemy machines, which were seen to be destroyed, and accounted for 11 in all. He showed splendid determination and initiative.

Sec. Lieut. G. E. H. McELROY, R.G.A. and R.F.C.—He has shown a splendid offensive spirit in dealing with enemy aircraft. He destroyed at least two enemy machines, and has always set a magnificent example of courage and initiative.

Temp. Capt. F. NUTTALL, R.F.C.—Seeing another machine driven down by hostile fire in the enemy's line, he glided to the ground under heavy fire and dispersed the enemy with his machine-gun. He took the stranded pilot on board and got safely away. By his prompt and courageous action he saved his comrade from being taken prisoner.

Sec. Lieut. T. L. STEELE, Gen. List and R.F.C.—When instructed to attack a hostile concentration he encountered heavy machine-gun and rifle fire, his petrol tank being pierced. Despite the risk of his tank catching fire, he continued to his objective, where he obtained excellent results, from bombs dropped from 400 ft. On a later occasion, though shot through his arm, he continued to his objective, and obtained excellent results. His courage and determination were most praiseworthy.

Temp. Capt. J. H. TUDHOPE, Gen. List and R.F.C.—He showed a splendid offensive spirit in continually attacking enemy aeroplanes. He has destroyed three enemy machines and has driven others down out of control, and always set a splendid example of courage and initiative.

Temp. Sec. Lieut. A. B. WHITESIDE, Gen. List and R.F.C.—He carried out several night bombing raids with great success, attacking enemy aerodromes, trains, and billets, often from a low altitude. On one occasion, he attacked a train with his machine gun from a height of 100 ft. He showed splendid skill and initiative.

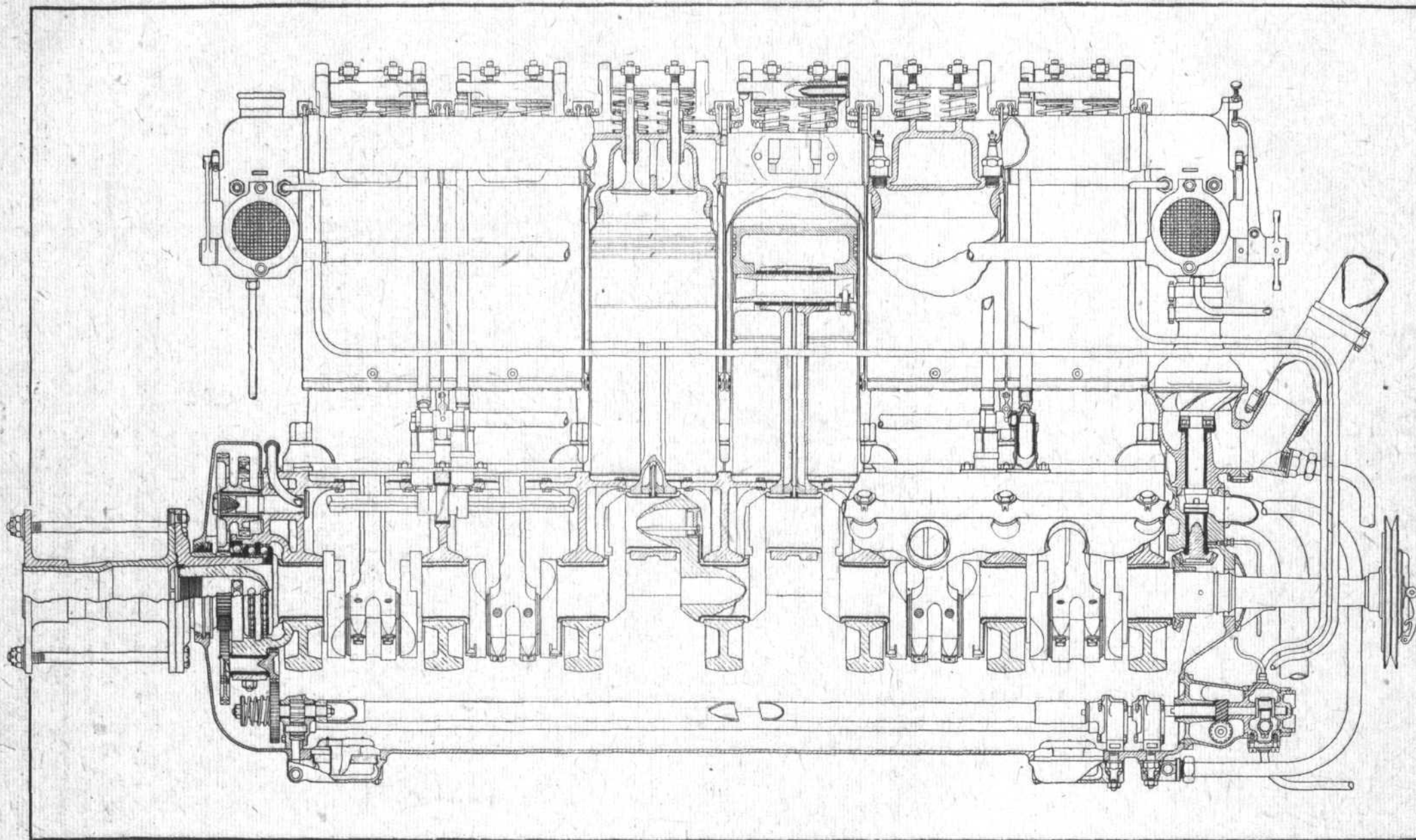
Temp. Capt. H. T. O. WINDSOR, Gen. List and R.F.C.—He carried out several night bombing raids with great success, attacking enemy aerodromes and railway communications, often from a low altitude. He acted as leader of a long-distance raid in bad weather conditions, but reached his objective and obtained direct hits. He set a splendid example of skill and determination to the pilots of the squadron.

Capt. R. N. WOLTON, R.F.A. and R.F.C.—He performed most successful work in co-operation with artillery, often under the most adverse weather conditions and at very low altitudes. On one occasion during a flight of four and a-half hours he successfully ranged a siege battery on one of the enemy's batteries and destroyed it, although he was attacked by enemy aircraft. He also attacked the enemy battery with bombs and machine-gun fire. By his courage and determination he has always set a splendid example.

Temp. Sec. Lieut. A. J. WRIGHT, Gen. List and R.F.C.—He carried out many reconnaissances at great distances over the enemy's lines and often over new and difficult country. On many occasions, despite adverse weather conditions, he obtained successful photographs and brought back valuable information. He has always shown splendid courage, determination, and skill.

Lieut. R. A. AUSTIN, Aust. F.C.—He was one of two pilots who carried out a remarkable series of photographs in one flight, which covered an area of 45 square miles. On an earlier occasion he alone had photographed in the completest detail an area of 20 square miles, in spite of intense anti-aircraft fire. During recent operations he has led all important bombing raids, and his skill and gallantry have been largely responsible for the excellent results attained. Previous to this he had landed in enemy country and rescued a pilot, who had been forced to land through engine trouble.

## THE 300 H.P. MAYBACH ENGINE.



General sectional arrangement.  
(See page 961 and following pages.)



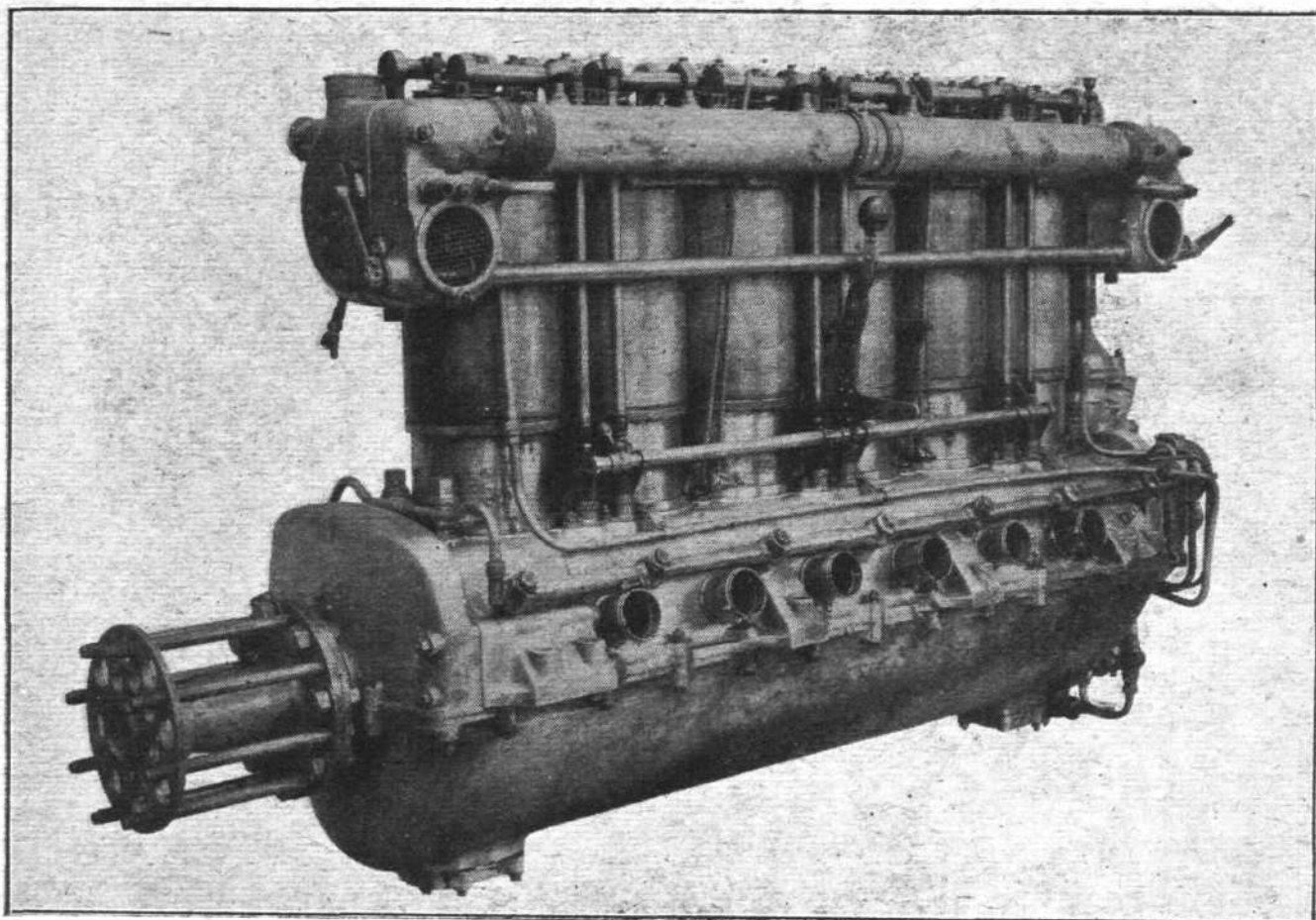


Fig. 1.—THE 300 h.p. MAYBACH ENGINE. Induction side view of engine. (Note.—The propeller hub flange bolts are not those normally used.)

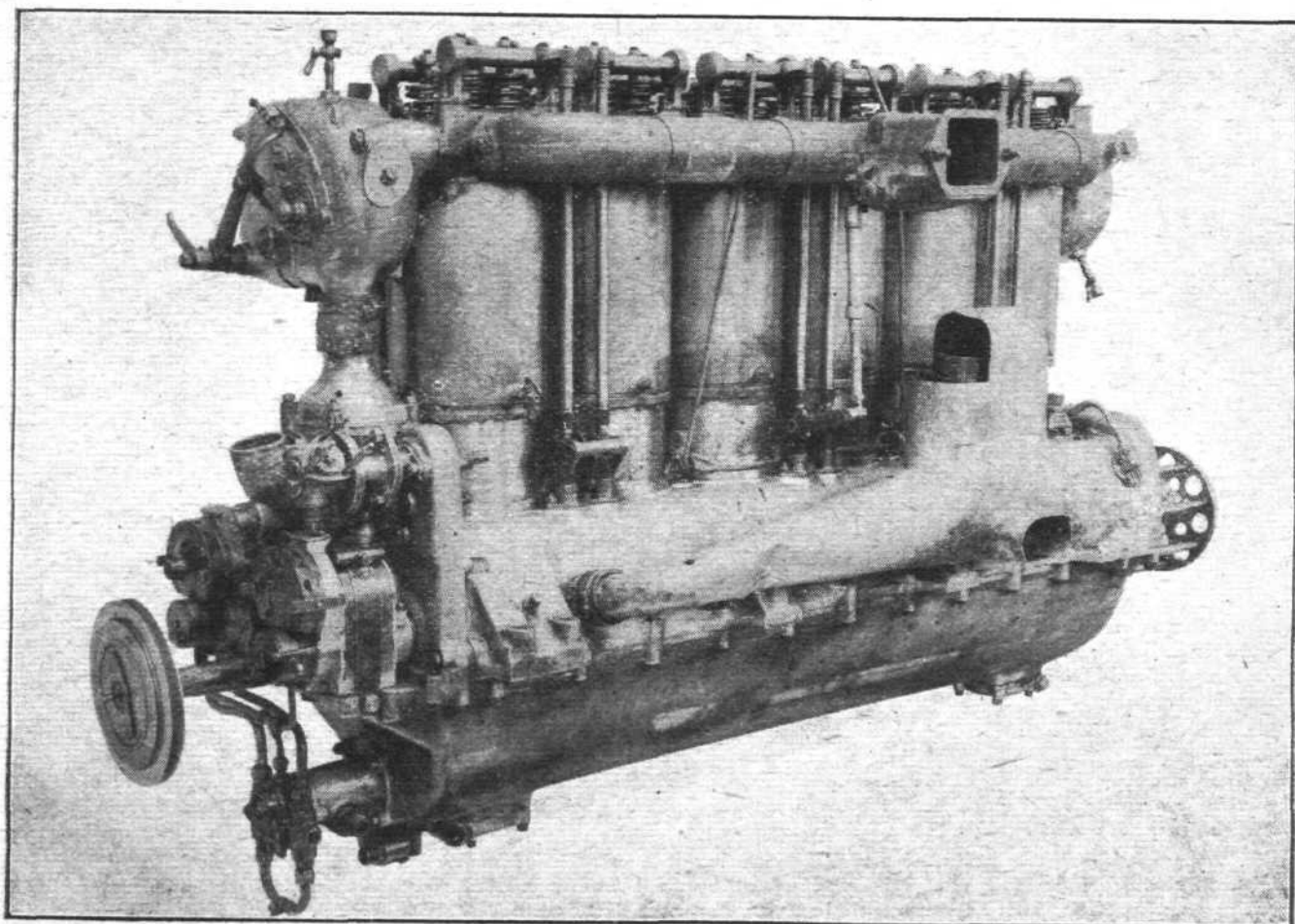


Fig. 2.—THE 300 h.p. MAYBACH ENGINE. Exhaust side view of engine, showing rear end carburettor and throttle indicator, water pump, magnetos, wireless dynamo, clutch-pulley, petrol pump and gun gear, and also the crank-case ventilator, which has been cut open to show oil trap.

# THE 300 H.P. MAYBACH ENGINE.

(See page 960.)

Issued by the Technical Department (Aircraft Production), Ministry of Munitions.

## Introductory Note.

THE general distinctive features of the design of the Maybach aero engines are, comparatively speaking, as well known amongst aeronautical engineers in this country as any of the enemy aero engines in service; firstly, by reason of the adoption of the old Wolsley-Maybach aero engines, the design of which was acquired before the war for airship work, and which was based on the design of the original Maybach engine; and secondly, through the publication of the somewhat incomplete details of construction of the Zeppelin-Maybach engines and their installation, which were collected under great difficulties from the remains of the several Zeppelin airships brought down during the war.

These engines, in almost every case, were so badly damaged by fire that it was found almost impossible at the time to compile any really detailed report of their design, or of their power and general performance.

A new and more powerful type of Maybach engine is now being used in service by the enemy, which, according to French reports, develops over 300 h.p., and which possesses great efficiency.

During the past few months several of the latest type of Rumpler machines have been captured fitted with the new

in which these new 300 h.p. Maybach engines are fitted, will, no doubt, be of some interest here. Full details of this machine, however, have already been issued in a published report by the *Section Technique de L'Aeronautique Militaire*.

As shown in Fig. 3, the Rumpler C.4 machine is a two-seater biplane, corresponding, more or less, to our D.H.4, and is generally fitted with a 260 h.p. Mercedes engine. These machines are designed for long-range artillery reconnaissance and photography, and are armed with two guns—one Spandau fixed in front of the pilot's seat, firing through the propeller, and a swivelling gun mounted in the observer's seat behind. A two-bladed air screw is fitted, and a semi-circular honeycomb radiator of unusual design is slung above the engine from the centre section. Other details of the construction of the Rumpler machine are shown in the photograph Fig. 3.

These machines are generally flown, according to report, at high altitudes—i.e., from 15,000 to 17,000 ft.—until over the lines, and from the French reports, the new 300 h.p. Maybach engines are more flexible and regular in running than the 260 h.p. Mercedes engines, and are generally preferred by the German pilots.

Compared with the 260 h.p. Mercedes engines fitted in these

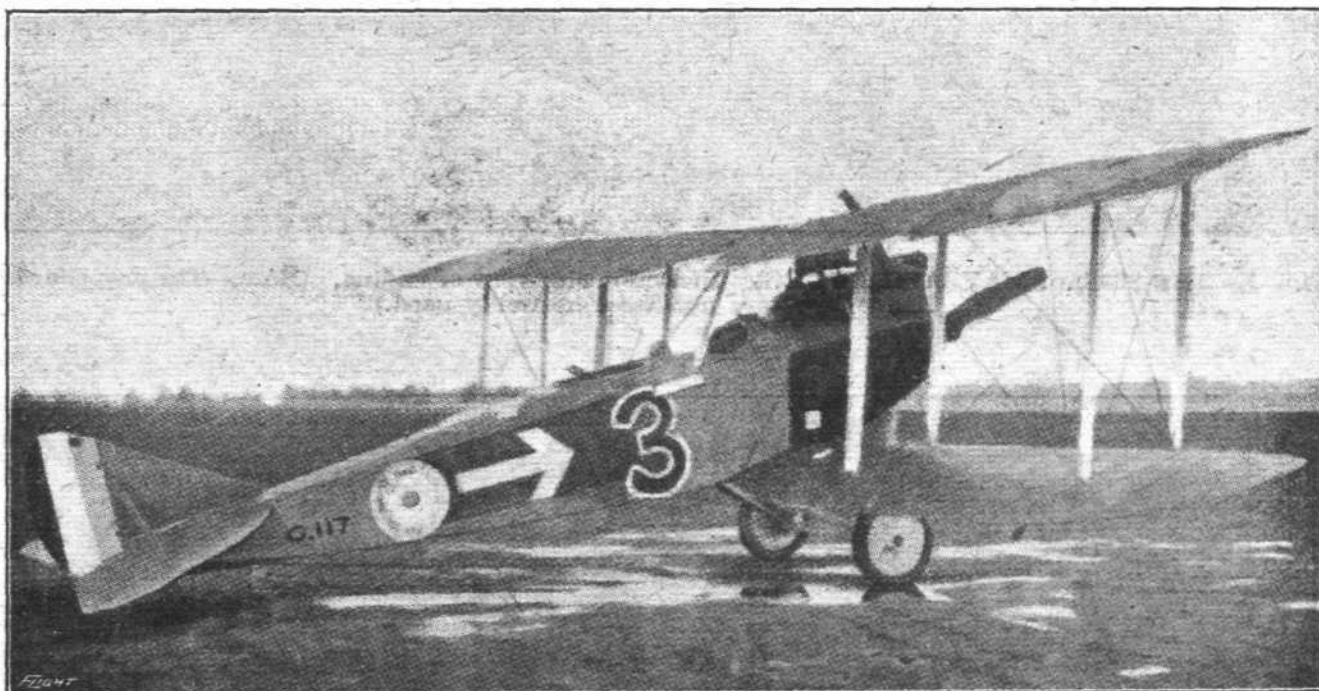


Fig. 3.—The Rumpler biplane—C 4 type.

300 h.p. Maybach engines. (These engines in their general design follow more or less the principle of the Zeppelin-Maybach 240 h.p. engines, and a detailed report, together with a full description of the constructional details and the general running performance of the new engine, is herewith given.)

The following report on the design of the 260/300 h.p. Maybach engines is based on a detailed examination of the engine (No. 1261) taken from a Rumpler two-seater biplane (G.120), known as the C.4 type. This machine was brought down in France by a shot which perforated the carburettor and water pump, on January 18th, 1918. The machine was, unfortunately, completely destroyed by fire on landing, but the engine was captured intact and little damaged. After slight repairs this engine has been put into running condition and tested for power, consumption, &c., at R.A.E. The results of these tests are given in the following report, together with metallurgical analysis and mechanical tests of materials and alloys used in the principal parts of the engine.

A complete list of the details of the design is given in the various data at the end of this report, including the percentages of weights of all parts, and the results of separate tests carried out on the carburettor and a new design of petrol pump which is used in conjunction with the interesting high-altitude carburettors.

A brief description of the Rumpler C.4 and 5 Type aeroplane

machines, the new Maybach engines are credited with attaining an increase of 200 r.p.m. at altitudes above 2,000 ft., and also possess greater efficiency in speed and climb in the Rumpler biplanes.

Total weight of machine fully loaded, approx. = 3,439 lbs.

## General Features.

The 300 h.p. Maybach presents several unusual and interesting details, and as compared with the old 240 h.p. Zeppelin-Maybach design, the new engines are undoubtedly a great improvement in general design and efficiency. The quality of the workmanship of every part, including the exterior finish throughout, is exceptionally good, and the working clearances are carried to very fine limits. Compared with any of the types of enemy engines, the workmanship is undoubtedly of a very much more finished nature; every part, nevertheless, shows the usual German characteristics of strength and reliability, combined with standardisation of parts and ease of manufacturing, in preference to the saving of weight.

The general lay-out of this engine follows the usual German six-cylinder vertical type. The compression ratio is exceptionally high, viz., 5.94 : 1, which necessitates the use of very heavy pistons and connecting rods; in these particulars this engine follows the previous Maybach practice, but the adoption of a cast-iron floating bush in the little end bearing is an interesting development.



Four overhead valves per cylinder are fitted, *i.e.*, two inlet and two exhaust. These are operated by rocker levers mounted on roller bearings in brackets fixed to the cylinder heads, as shown in Fig. 2, and by push rods on each side of the cylinders actuated by separate inlet and exhaust camshafts.

The camshafts run in plain bronze bearings in the crank-chamber, and are splash lubricated.

Little alteration has been made in the design of the massive crankshaft, which runs on plain white-metal lined bearings throughout, and is provided with the well-known Maybach type centrifugal pressure lubrication system to the crank-pins, thence to the gudgeon pins through small pipes inside the hollow connecting-rods.

The three separate and detachable gear oil pumps, which are situated in the bottom of the base chamber, are of new design.

The pump driving shaft at the front end is driven through a ratchet gear on the front scavenger pump, apparently with

propeller-hub driving flange on the tapered front end of the crankshaft.

Practically no alteration has been made to the general design of the very simple and efficient type of water pump, which delivers directly into the bottom of the rear end carburettor water jacket as in the old Maybach engines. Ignition is by two Z.H.6-type Bosch magnetos, which are driven directly off the rear ends of the camshafts; the position of the sparking plugs in the cylinder heads is a point of interest dealt with in detail in the following description.

**Cylinders.**—In comparison with the Zeppelin-Maybach engines, the cylinders of the new 300 h.p. Maybach engines are of very much lighter construction; and, as will be seen from the photographs and sectional drawings, are of a wonderfully clean design. Each cylinder shows practically a rectangular view from almost any point of view, with no excrescences or extensions. The whole construction of the cylinders, and particularly the formation of the cylinder head, presents many interesting details of design.

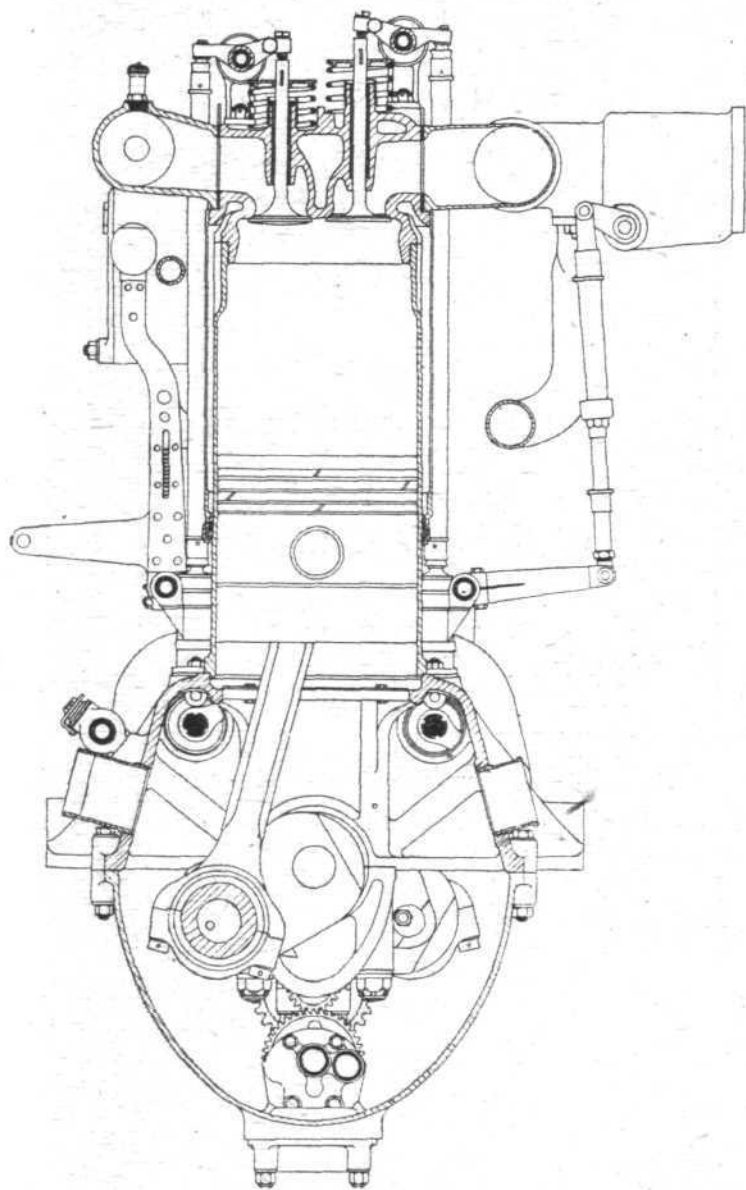


Fig. 4.—Cross-section.

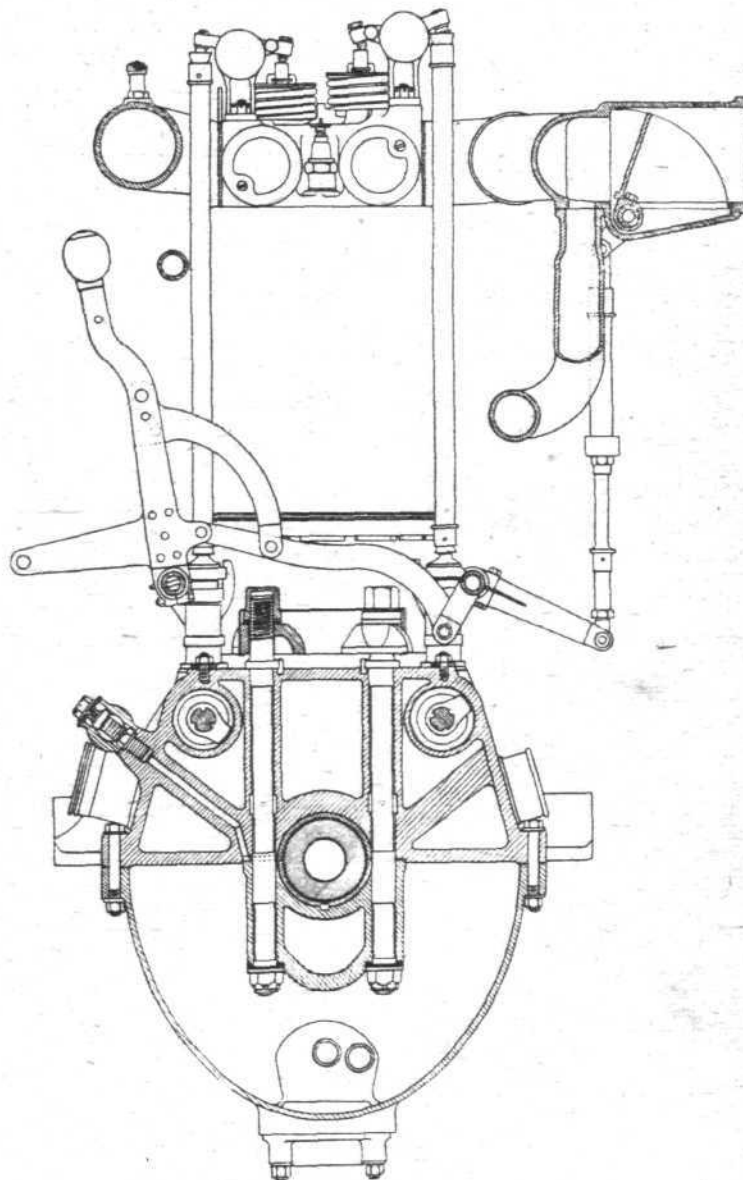


Fig. 5.—Cross-section through crankcase, showing method of holding cylinders and journal bearings.

the object of preventing an air lock in the lubrication system in the event of back-firing.

A double-acting, oil-sealed petrol pump of unusual design is now fitted. This is driven off an extension of the main oil pump spindle at the rear end of the base chamber, and works, of course, in conjunction with the two separate carburettors. These are of the well-known Maybach type, and have been only slightly modified. As shown in Figs. 2 and 3, they are attached, as in the Zeppelin engines, to the front and rear cylinder water jackets. A full description of the functions and workings of this interesting type of carburettor is given towards the end of this report.

The well-known Maybach induction type starting gear is fitted, but is slightly modified in design.

The whole of the induction system and the oil condensing crankcase ventilating system is an interesting point in the design of this engine, as is also the method of attaching the

Referring to the sectional drawing, Fig. 7, it will be seen that each cylinder is built up of a thin steel barrel, machined and ground to 165 mm. bore, and machined on its outer surface to a thickness of 3 mm. The thickness is increased from 3 mm. at the bottom of the water jacket to 4.5 mm. at the cylinder base flange. Into the top of the cylinder barrel is screwed the cylinder head, which is of cast-iron. A detailed sketch of this screwed joint is shown in Fig. 8. The screw thread, it will be noted, is 2.3 mm. pitch, buttress thread. A soft brass washer is fitted at this joint between the cylinder head and the top face of the screwed portion of the cylinder barrel.

The bottom of the cylinder barrel extends only 3.5 mm. below the base flange into the registering joint of the crankcase, and the bore of the cylinder is very little chamfered.

The design of the cylinder heads and the formation of the water passages round the twin inlet and exhaust valves is

unusual, and the double inlet and outlet water connections between each pair of cylinders are of new design. The formation of these twin water connections is clearly shown in the detail sketch of the cylinder head (Fig. 9), together with the water passages cast round the sparking plug bosses; the latter are somewhat inaccessibly situated in the space between the two cylinder head water joints. The two semicircular bosses which are cast on the sides of the cylinder water joints are provided for the attachment of the two carburettors, which are fixed to the front and rear cylinders by long studs screwed into these bosses in the water joints. To allow for the interchangeability of the cylinders, these holes are drilled in every cylinder; when the cylinder is not assembled at the front or rear, they are plugged with brass grub screws as shown in the sketch.

An interesting point of design in these cylinders lies in the fact that no water connections between the cylinders are made other than the twin head-joints referred to. This principle is similar to that used in the cylinders of the Zeppelin-Maybach engines; these were provided with one large water joint, 5 in. diameter, between each pair of water jackets, which was an extension of the cast-iron head. The cylinder barrels were also of cast-iron, and were fitted with two inlet and three exhaust valves per cylinder.

The exhaust valve pockets are provided with an additional water passage above the exhaust port, and cast so as to give a free water space completely round the centre portion of each exhaust valve-stem guide.

The valve guides cast in the cylinder heads are fitted with cast-iron bushes pressed into position. The exhaust bushes do not extend the full length of the guides as the inlet do, but are kept back a distance of 10 mm. from the bottom of the guide, so that they are protected from the hot gases.

As a further precaution against seizing, the diameter of the bottom of the exhaust bush is slightly reduced so that the bush has room to expand.

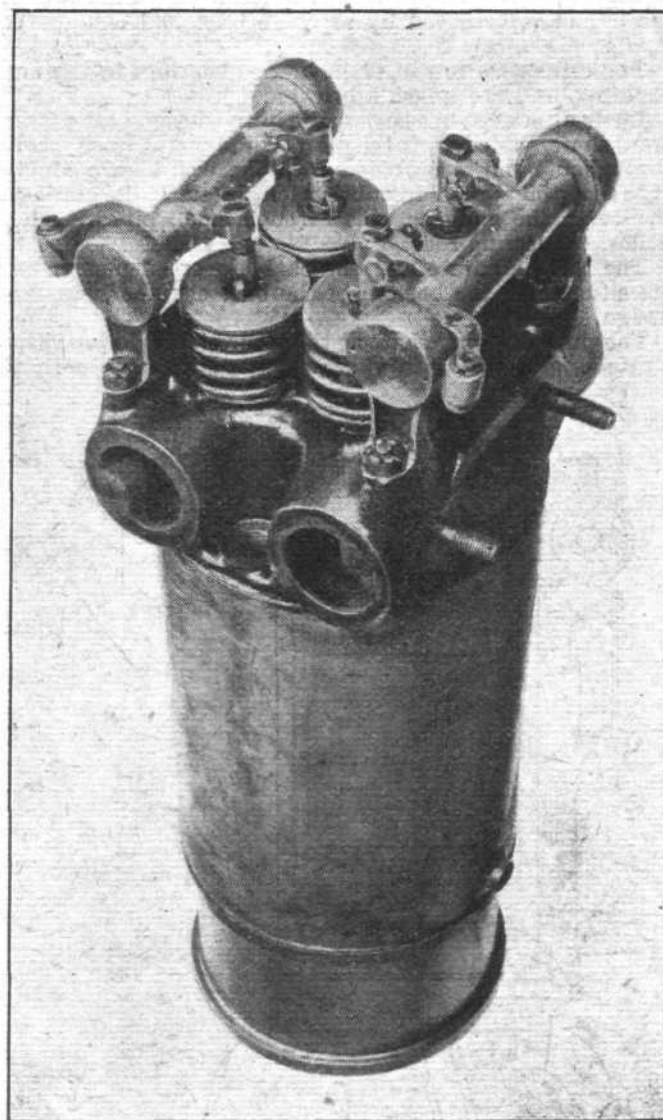


Fig. 6.—Cylinder, complete.

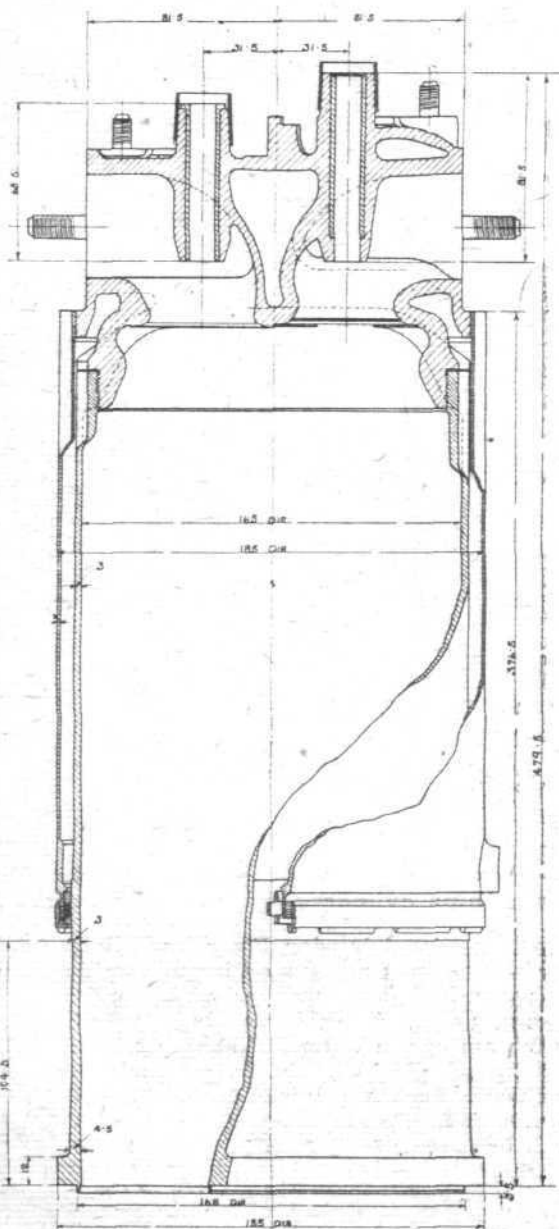


Fig. 7.—Cross-section of cylinder through inlet and exhaust valves, and section of cylinder barrel and water jacket on cylinder central axis.

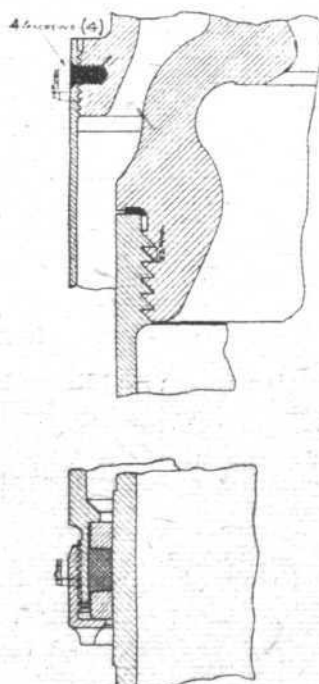


Fig. 8.—Details of cylinder head and water jacket screwed joints.

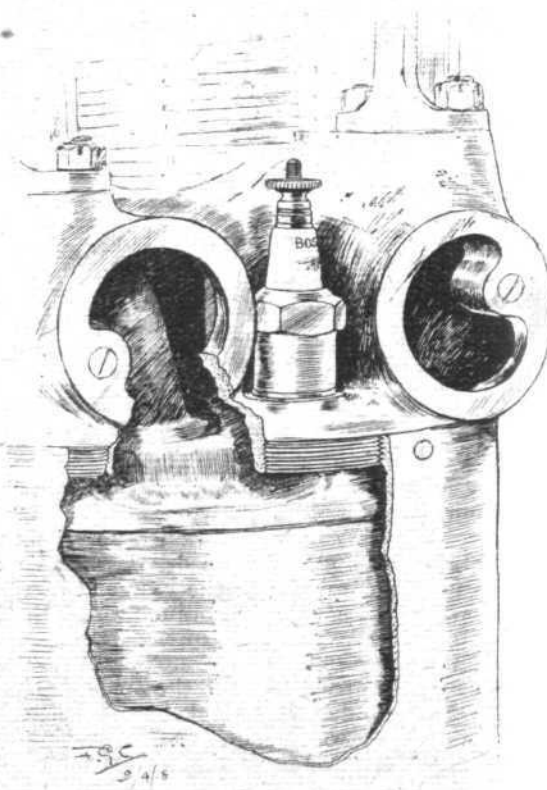


Fig. 9.—Sketch of cylinder head, showing water passages and connections.



Contrary to the usual German practice of building up the water jackets of sheet steel acetylene-welded at the joints, the water jackets are machined from cylindrical steel forgings, which, as shown in Fig. 8, are screwed on to the flange machined on the cylinder head; the pitch of this thread is 1 mm. This screwed joint is finally sweated in position with soft solder, the whole depth of the screwed portion having apparently been previously tinned; the joint is locked with four 6 mm. grub screws.

The whole of the water jacket is machined both on the inside and also on the outer surface to a thickness of 1 mm. The water jackets extend to 104 mm. from the base of the cylinders, or, roughly to two-thirds of the total length of the cylinder barrels; but, as will be noted, the water space is exceptionally narrow—i.e., 7 mm.

The only water passages from the cylinder head to the annular water space of the water jackets is through the openings or passages cast in the cylinder heads encircling the sparking plug bosses, and situated directly below the twin water connections. The formation of these water passages

bolted to the inlet and exhaust ports of the cylinder heads to stiffen up the engine.

**Pistons.**—Very little alteration has been made to the general design of the piston in comparison with the smaller Maybach engines. The pistons are of cast-iron, and weigh 12.3 lbs. each, complete with rings. Four rings are fitted all above the gudgeon pin, the lower one being a scraper ring. All the rings are concentric, and are 6.5 mm. wide (vertically) and 5.5 mm. deep, the depth of the ring grooves being 6 mm.

The pistons, as will be seen in Fig. 10, are quite flat on both the top and bottom surfaces of the crown, which is 10.5 mm. in thickness. Eight 4 mm. return oil holes are drilled through the piston below the scraper ring in the usual way.

The rings are cut diagonally at 45°, no locating pegs being fitted; and the width of the ring gap in the cylinder is 1.39 mm. = .055 in.

All the piston rings are machine hammered on their inner surfaces. This process, which is now extensively used, and is well known, consists of subjecting the inside face of the ring

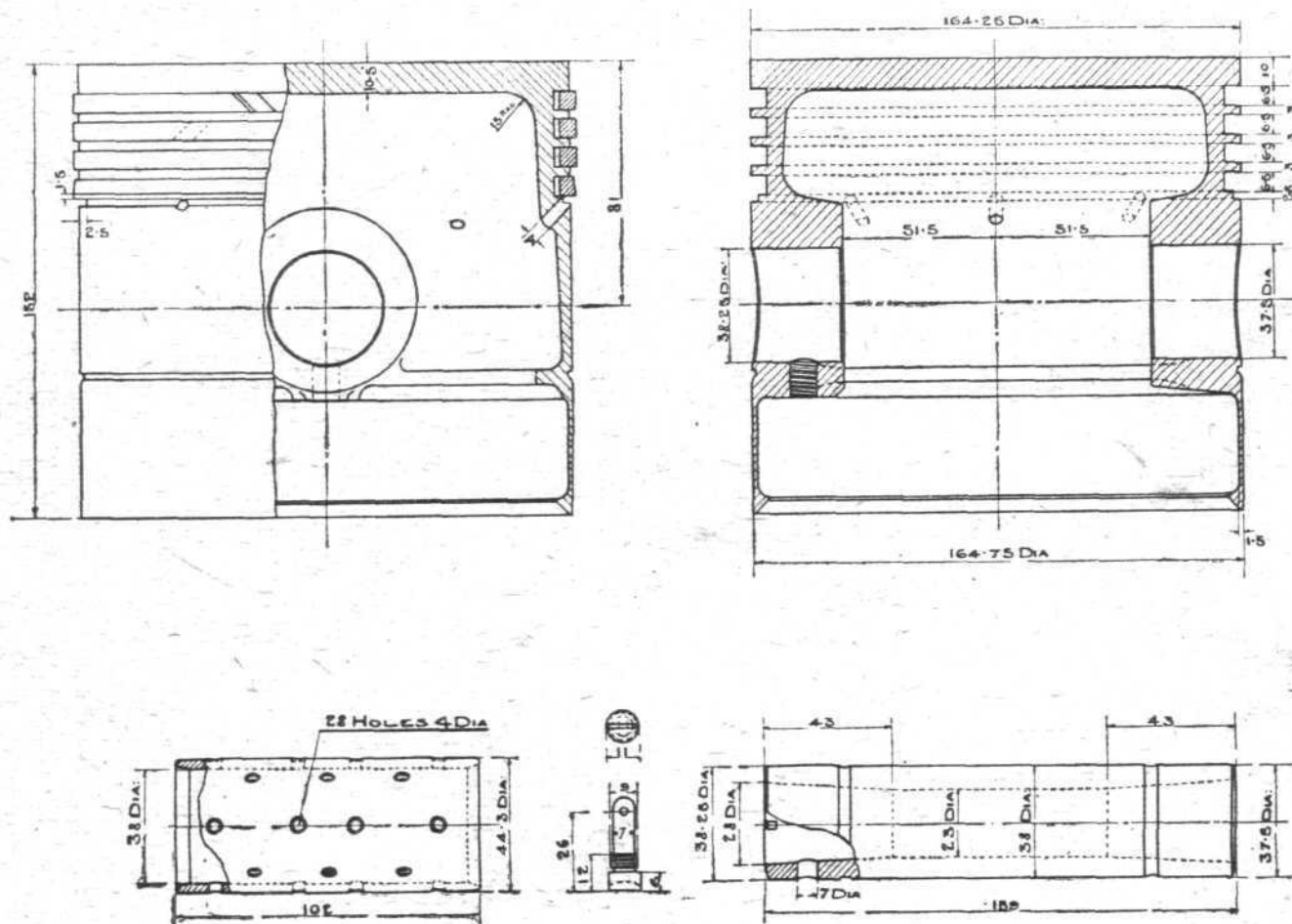


Fig. 10.—Details of pistons, gudgeon pins, and floating small-end bushes.

leading from the head of the jacket is made clear in the perspective sketch (Fig. 9).

The water jacket capacity of one cylinder = 1284 C.C.S.

Fig. 8 shows an enlarged view of the lower joint between the cylinder barrel and the water jacket. This joint consists of a soft rubber composition packing ring, compressed in position between two steel rings by a large ring which screws on to the bottom of the water jacket by a fine pitch thread in the manner shown in the sketch. This joint is, to a certain extent, flexible, and allows for the relative expansion between the cylinder barrel and the water jacket.

Small drain plugs are provided at the bottom of each cylinder water jacket; these are screwed into bosses welded into the water jackets on the exhaust side. The combustion chamber is circular, but it is slightly recessed below all of the four valve seats, which are all of the same diameter—i.e., 54 mm.

The area of both the inlet and exhaust ports is 30.15 sq. cm. = 4.66 sq. in.

The clearance volume of one cylinder = 778.9 cub. cm. = 47.54 cub. in., giving a compression ratio of 5.94 : 1.

Short pieces of aluminium tube are fitted over the top ends of the lugs in the cylinder heads forming the valve stem guides. These are shown in Fig. 7, and are apparently provided for lubrication purposes. Thin sheet steel plates are

to a series of mechanical hammer blows at gradually increasing distances apart. The process shows a large number of small transverse depressions, extending nearly the width of the ring on the inner surface. These depressions caused by the hammer are approximately 1 mm. apart at the back portion of the ring—i.e., the part of the ring farthest from the gap—and increase in mathematical progression to about 4 mm. apart towards the front of the ring up to about 1 in., on either side of the gap. This mechanical hammering of the inside ring has the effect of giving the desired uniform pressure to the concentric ring against the cylinder wall.

The holes for the gudgeon pin are bored eccentrically in the gudgeon pin bosses, giving a thickness of metal of 14 mm. above and 9 mm. below the gudgeon pin. An oil groove is cut in the piston skirt below the gudgeon pin, evidently to assist the scraper ring and the piston lubrication. The inside of the skirt is machined up as far as the bottom of the gudgeon pin bosses, and a bevelled lip is turned on the bottom flange of the skirt. The inside of the piston is also machined flat across the head, and down as far as the top of the gudgeon pin bosses with 15 mm. radius; an annular rib is cast on the inside of the skirt to reinforce the gudgeon bosses.

Other details of the design of the pistons are given in the section drawing Fig. 10.

(To be continued.)

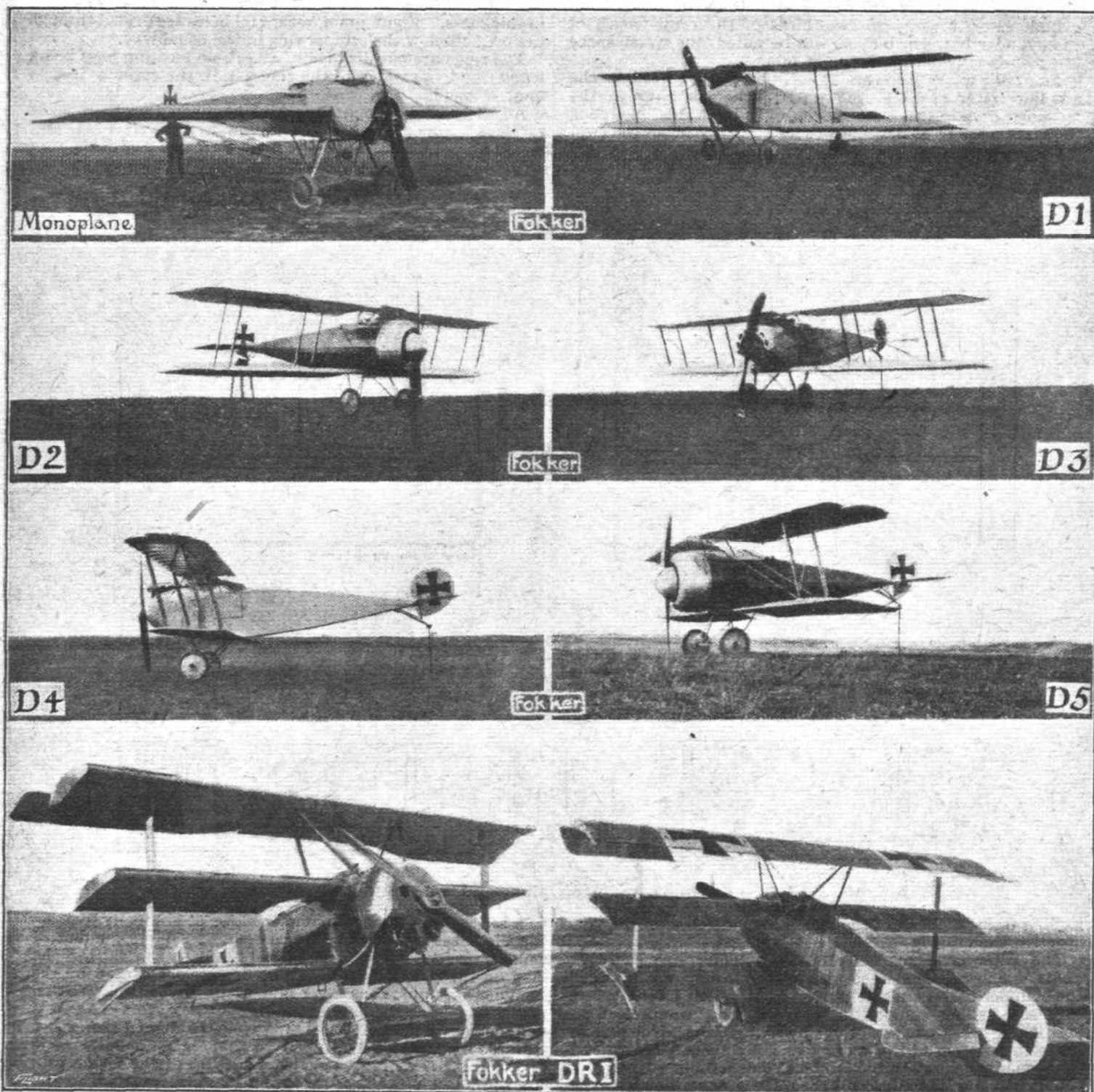
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## SOME FOKKER "MILESTONES."

THE accompanying set of photographs, reproduced from a German paper, gives a very good idea of the development of the products of the Fokker firm since the outbreak of war. To make the series quite complete one should include the original Fokker monoplane—which was *not*, by the way, the machine so much advertised and greatly overrated at one period of the war. The first Fokker monoplane was of very unusual appearance, having wings sloping back at a

one period regarded by many uninitiated in this country as very formidable machines. This reputation was scarcely deserved, for the machines had in no way a performance superior to the best of our own of that particular period. They were handled skilfully by "crack" pilots, and our own men were handicapped by an inadequate supply of such machines as were superior to the Fokkers.

We now come to the Fokker biplanes. Here we would



Some Fokker "milestones."

considerable angle, and set at a great dihedral angle laterally. This machine was claimed to be automatically stable, and was in fact not fitted with any means for lateral control, either warp or ailerons. The machine was, however, illustrated several times in "FLIGHT" long before the war, and also in our issue of September 4th, 1914, to which we would refer readers wishing for further particulars.

Since the outbreak of war the first Fokker machine to become known to our readers was the monoplane shown in the left-hand top corner of our illustration. It was on monoplanes of this type that the famous German "Aces" Immelmann and Boelke won their fame, and which were at

warn our readers that the class numbers should not be trusted too implicitly. Whether in error or by way of a little camouflaging we cannot say, but the German journal from which we reproduce the illustrations appears to have got things mixed a little: The D.1 (the D class in Germany are single-seater fighters) has a water-cooled engine, with the radiators mounted on the sides of the fuselage. There are two pairs of inter-plane struts on each side. The D.2 has a rotary engine, and its body has been carefully streamlined. Also there is a spinner fitted over the boss of the propeller. The D.3 appears to be less elaborate, having a flat-sided body and no spinner. This also has a rotary engine. The



Fokker D.4 (which, by the way, looks uncommonly like the identical machine previously depicted as D.1.—Ed.) has a water-cooled vertical engine. In the D.5 the rotary engine has come into favour again, but only one pair of interplane struts is fitted on each side.

So much for the biplanes. The Fokker triplane D.R.I has already been fully described and illustrated in previous issues of "FLIGHT," and no more need be said about this

type. Whether or not there is a later, or perhaps several, type of Fokker triplane we do not know, but we understand that the triplanes were not long in vogue, chiefly, it is said, on account of a certain inconsiderate habit they had, that of leaving their top plane behind during a steep dive. The Fokker type D.VII biplane described in our issue of July 25th, 1918, brings the Fokker family fairly up to date.

## IN THE HANDS OF THE ENEMY.

THE following is an official list, published in Germany, of British machines which the Germans claim fell into their hands on the Western Front during the month of June, 1918:—

### 32 D.H. 4's, two-seaters.

No. 2181, Sec. Lieut. A. Haley, dead; Sec. Lieut. de Gordet. No. could not be ascertained, Lieut. E. A. Magee, Lieut. R. J. Gregory, both prisoners.

No. D9266, Lieut. L. A. Hachleff, Sergt. W. Elliot, both prisoners.

No. of machine and names of occupants could not be ascertained, both dead.

No. of machine could not be ascertained, F. Cadet McKenzie, dead; name of other occupant could not be ascertained, dead.

No. of machine and names of occupants could not be ascertained, both dead.

No. of machine and names of occupants unknown, both dead.

No. of machine and names of occupants unknown, both dead.

No. 9332, names of occupants unknown, both prisoners.

No. A.V. 4307 B.D. 2160, names of occupants unknown; dead.

No. 7866, names of occupants unknown; dead.

No. 3706, Lieut. Jenins, prisoner; Lieut. Davis, dead.

No. 3274, names of occupants unknown; prisoners.

No. unknown, F. S. Gauter, fate unknown.

No. unknown, Lieut. Chapin, dead; Sergt. Wiggin, fate unknown.

No. of motor 22909 S.D., Lieut. Deetjen, Cole, both dead.

No. 5571 D, names of occupants unknown, both prisoners.

No. of motor A. 16123, Lieut. Tannenbaum, Lieut. Zeaxens, both prisoners.

No. D 1728 M3485, names of occupants unknown, prisoners.

Standart Motor, Lieut. Webster, Lieut. Gray, both prisoners.

No. B 9334, Lieut. Robinson, Lieut. Cocking, both prisoners.

In the case of 11 D.H. 4 two-seaters the numbers of the machines and the names of the occupants could not be ascertained.

### 19 S.E. 5's, single-seaters.

No. of machine and name of occupant unknown; dead.

Wolseley Hispano motor, Sec. Lieut. J. J. Daws, dead.

No. C 6497, Lieut. Gg. Franklin Thompson, fate unknown.

No. of machine and name of occupant unknown, dead.

No. of machine and name of occupant unknown, dead.

No. C 9498, name of occupant unknown, prisoner.

No. B 7830, name of occupant unknown, prisoner.

No. D 6876, Lieut. Herbert E. Thomson, prisoner.

No. of machine and name of occupant unknown, dead.

No. 4812 B, Lieut. Garret, prisoner.

No. C 9626, name of occupant unknown, dead.

In the case of 8 S.E. 5 single-seaters the numbers of the machines and the names of the occupants could not be ascertained.

### 16 Sopwith Camels, single-seaters.

No. B 8231, Sec. Lieut. Alexander Renton, prisoner.

No. unknown, Lieut. Alan Dewitt, dead.

No. 3848, Lieut. N. Breckenridge, prisoner.

No. of machine unknown, Lieut. F. C. Dodd, dead.

No. C.D. 2791, Capt. J. D. Belgrave, dead.

No. D 6487, Sec. Lieut. S. M. Connolly, prisoner.

Motor Hispano-Suiza, Lieut. Grueder, dead.

No. B 7227, Lieut. Carr, prisoner.

No. D 9614, Lieut. C. F. Boottmann, dead.

No. of machine and name of occupant unknown, prisoner.

In the case of 6 Sopwith Camel single-seaters the numbers of the machines and the names of the occupants could not be ascertained.

### 18 Sopwiths, single-seaters.

No. unknown, name of occupant not ascertained, prisoner.

No. of machine not known; Kelly, prisoner.

No. 3369, J. A. Sykes, dead.

No. unknown, Lieut. Hubert Mason, prisoner.

No. of machine and name of occupant unknown, dead.

No. D 3691, Lieut. Wilinka, prisoner.

No. 9626, name of occupant unknown, dead.

No. of motor 11347, Lieut. Charles Milian, dead.

No. 1319, name of occupant unknown, prisoner.

In the case of 4 Sopwith single-seaters the numbers of the machines and the names of the occupants could not be ascertained.

### 12 Bristol Fighters.

No. of machine unknown, Lieut. Webster, dead.

No. of machine and names of occupants unknown, both dead.

No. C 788, names of occupants unknown, both dead.

No. D 8028, E. Dumville, dead; F. Williams, prisoner.

No. of machine and names of occupants unknown, prisoners.

No. 49159 B.D., Capt. Sander, Lieut. Cabbern, both dead.

No. of machine and names of occupants unknown, both dead.

No. of machine and names of occupants unknown, both dead.

No. 1162, Lieut. Cyril E. Taylor, Lieut. A. V. Bollins, both prisoners.

In the case of 3 Bristol fighters the numbers of the machines and the names of the occupants could not be ascertained.

### 6 E.E. two-seaters.

No. unknown, Sec. Lieut. Leh. Wharton, 1st Lieut. J. E. Preyor, both prisoners.

No. unknown, Lieut. J. N. Thomson, Sec. Lieut. L. J. Ingrax, both prisoners.

No. of machine and names of occupants unknown, prisoners.

No. B 7808, names of occupants unknown, prisoners.

No. unknown, Lieut. Evans, Lieut. Collot, both prisoners.

No. 5689, Lieut. Turner, Lieut. Tempest, both prisoners.

### 5 D.H. 9 two-seaters.

No. 2900, names of occupants unknown, both dead.

No. unknown, Lieut. Cutmore, Lieut. Duncan, dead.

No. unknown, names unknown, both prisoners.

No. unknown, Lieut. E. A. Windridge, name of other occupant unknown, both dead.

In the case of one D.H. 9 the number of the machine and the names of the occupants could not be ascertained.

### 1 Nieuport single-seater.

No. 6193, Sec. Lieut. Philipp W. Davis, dead.

### 1 Sopwith two-seater.

No. 818, Lieut. J. Doe, Lieut. A. Elvin, both prisoners.

### 1 Sopwith Dolphin.

No. of machine and name of occupant could not be ascertained.

### 1 Gitterrumpf. ("Pusher" with open framework carrying tail.—Ed.)

No. A 5780, names of occupants not ascertained, both prisoners.



### New Use for Aeroplanes.

THE ordinary means having failed to locate the body of Rifleman Ward, who was drowned while bathing in the lake at Sulby Hall Hospital, the residence of Maj. Paget, an aviator flew over the water and was able to indicate its position.

### In the Hun Style.

ON landing near Cadzand, Holland, on August 21st, a German aviator opened fire with his machine-gun and civilians had to hurriedly scatter to shelter. The pilot proved to be drunk.

# THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

**Published August 20th.**  
**Died of Wounds.**

Galbraith, Sec. Lieut. J. G.

**Wounded.**

Cunningham, Lieut. V. G.  
Giles, Lieut. W. B.  
Gregg, Sec. Lieut. C. S.  
Kirkpatrick, Lieut. Y. E. S.  
Lewis, Sec. Lieut. K. V. C.  
Lick, Lieut. C. H.

McCarthy, Lieut. B. L.  
Taylor, Lieut. A. B.  
Towell, Sec. Lieut. W.  
Traviss, Sec. Lieut. G. G. (E. Yorks).  
Van Someren, Sec. Lieut. W. N.  
Whitehead, Sec. Lieut. C.

**Missing.**

Brinkworth, Sec. Lieut. W. H. (Royal F.).  
Forsyth, Lieut. A. F.  
Hopperton, Capt. H. R.

**Published August 21st.**

**Killed.**

Burton, Sec. Lieut. S. G.  
Cannon, Sec. Lieut. F. W.  
Grimwade, Sec. Lieut. S. A.  
Hatcher, Sec. Lieut. H. B.

Jacques, Lieut. H. M.  
McHarg, Lieut. L. H.  
Walker, Lieut. H. W.

**Wounded.**

Akin, Lieut. T. A.  
Amatt, Lieut. E. G.  
Bird, Sec. Lieut. F. A.  
Bruce, Lieut. E. R.  
Dempster, Sec. Lieut. D. F.  
Dendy, Sec. Lieut. P.  
Dunn, Sec. Lieut. J. (Cam. Hrs.).  
Gall, Lieut. F. L.  
Hawkins, Sec. Lieut. V. S. G.

Lye, Lieut. A. H.  
Macclatchy, Lieut. R. S.  
McAlery, Capt. J. M.  
Mellor, Sec. Lieut. A. B.  
Menendez, Lieut. F. T. S.  
Pinkerton, Sec. Lieut. D. M.  
Reynolds, Capt. F. G. B. (Bucks, T.F.).  
Robinson, Lieut. F. E.

**Missing.**

Coombs, Sec. Lieut. E. S.  
Hammond, Lieut. H. L.  
Hutchinson, Sec. Lieut. W. J.

John, Lieut. W. A. (Sussex Yeo.) (T.F.).  
Matthews, Capt. J. W.

**Published August 22nd.**

**Killed.**

Butler, Sec. Lieut. W. A. M.  
McEvoy, Sec. Lieut. E.  
Nutcombe, Sec. Lieut. T. A. (E. Lanc.).

Ramney, Lieut. K. A.  
Sayers, Sec. Lieut. L. F. C.  
Smith, Sec. Lieut. H. S. (London) Lanc.).

**Died.**

Gant, Lieut. R. W.

Scholte, Lieut. O. J. F. (Bedf.).

**Wounded.**

Dunbar, Sec. Lieut. J. H.  
Mawle, Lieut. N. W. R. (London R.).  
Percival, Lieut. J. F. S.

Robinson, Lieut. A. W.  
Weakley, Lieut. E. G. K.

**Missing.**

Arundel, Lieut. P. W. R.  
Chase, Sec. Lieut. D. E.  
Cox, Sec. Lieut. W.  
Doncaster, Sec. Lieut. A. E.

Hall, Sec. Lieut. J. G.  
Lovell, Sec. Lieut. C. E. A.  
Riddell, Lieut. L. H.  
Sampson, Lieut. A. T.

**Published August 23rd.**

**Killed.**

MacKenzie, Sec. Lieut. D. F.  
Morby, Sec. Lieut. J. S. (Lond. R.).  
Richards, Sec. Lieut. H. S. (Essex R.).

Small, Lieut. J. B. (Rif. Brig.).  
Todman, Lieut. C. V. (Lond. R.).  
Williams, Lieut. C. H.

**Died of Wounds.**

Barker, Lieut. C. N.

Olmstead, Sec. Lieut. G. T.

**Wounded.**

Holmes, Sec. Lieut. W.  
Ibbotson, Sec. Lieut. F. (Sher. For.).  
Little, Lieut. H. R.

May, Lieut. W. R.  
Williams, Lieut. A. F. (Mon. R.).

**Missing.**

Anderson, Lieut. J. D.  
Brookes, Sec. Lieut. W. L.  
Brown, Lieut. H. M.  
Brown, Lieut. L. L.  
Forrest, Lieut. L. H. (I.A. Inf.).  
Foster-Sutton, S. W. P. (Buffs.).

Goodale, Lieut. W. H. (Sask.).  
Hamilton, Lieut. A.  
Hemmings, Lieut. R. H.  
Lefroy, Lieut. C. B. H.  
Thompson, Sec. Lieut. L.  
Tison, Sec. Lieut. M.

**Published August 24th.**

**Killed.**

Adam, Lieut. W. (R. Scots Fus.).  
Benitz, Lieut. F. A.  
Cloete, Sec. Lieut. M. N.  
Foggin, Maj. C. E.

Green, Sec. Lieut. M. L.  
Kesterton, Sec. Lieut. T. F.  
May, Sec. Lieut. T. R. A.  
Sproson, Lieut. W. W. (Lancs. Fus.).

**Wounded.**

Aymard, Lieut. M. F. L. (R.F.A.).  
Batchelor, Maj. T. A.  
Beesley, Sec. Lieut. E. R.  
Bowman, Sec. Lieut. A. (K.L.R.).  
Cooke, Lieut. B. A.  
Lewis, Sec. Lieut. J. A. (S. Wales B.).  
Malone, Sec. Lieut. C.

Norman, Lieut. R. E.  
Pugh, Lieut. L. J.  
Richardson, Lieut. J. T.  
Straker, Sec. Lieut. G. V.  
Watkins, Sec. Lieut. J. R.  
Williams, Sec. Lieut. H. L.  
Williams, Lieut. W. C. (Leic. R.).  
Wormald, Sec. Lieut. W. M.

Boger, Lieut. W. O. (Can. Cav.).  
Hodson, Lieut. G. F.

**Missing.**

Jardine, Capt. B. G.  
Munday, Lieut. E. R.

**Published August 26th.**

**Killed.**

Fleet, Sec. Lieut. J. G.  
Gillespie, Sec. Lieut. R. H.  
Goodburn, Sec. Lieut. R.

Hunter, Lieut. A. J. (Midd'x R.).  
Meikle, Sec. Lieut. A. J. B.  
Roscoe, Sec. Lieut. J. F.

**Died of Wounds.**

**Died.**

McCallum, Lieut. J. M.  
Berry, Lieut. E. A.

**Wounded.**

Adamson, Lieut. W.  
Bryning, Lieut. H. E. W.  
De Jean, Sec. Lieut. I. L.  
Haines, Sec. Lieut. A. L. F.  
Jones, Lieut. W. (Worc. R.).  
Northridge, Sec. Lieut. G. W.

Plant, Sec. Lieut. O.  
Pullen, Sec. Lieut. C. E.  
Robertson, Sec. Lieut. A.  
Smith, Sec. Lieut. J. R.  
Stokes, Lieut. R. C.  
Turner, Capt. F. McD. C.

**Missing.**

Brock, Sec. Lieut. F. A.  
Doncaster, Sec. Lieut. E. L.  
Gaukroger, Lieut. J. K.  
Goffe, Sec. Lieut. W.  
Gonne, Capt. M. E. (Royal Fus.).  
Gorman, Lieut. G. W.  
Hartley, Sec. Lieut. W. N.  
Kelly, Sec. Lieut. R. (Rif. B.).

Mallett, Lieut. H. P.  
Parke, Sec. Lieut. J. E. (Royal F.).  
Powell, Capt. F. G.  
Ramsey, Lieut. G. S.  
Russell, Lieut. F. C.  
Schooling, Sec. Lieut. G. R. (North'd. F.).  
Whitfield, Capt. G. H. P. (R. Ir. R.).

**Published August 27th.**

**Killed.**

Goosey, Sec. Lieut. H. (North'n).  
Isaac, Sec. Lieut. W. W.  
Metcalf, Sec. Lieut. N.

Plant, Sec. Lieut. C. R.  
Taylor, Lieut. J. A. C.  
Young, Capt. W. B.

**Previously Missing, now reported Killed.**

Chapman, Lieut. J. E. (Aus. F.C.).

**Died of Wounds.**

Cunningham, Lieut. H. S. (W. Ont.).  
Paget, Sec. Lieut. F. J.

**Accidentally Killed.**

Shepherd, Sec. Lieut. O. D. (Aus. F.C.).

**Wounded.**

Ankers, Capt. B.  
Beauchamp, Sec. Lieut. A. W. L.  
Cook, Lieut. R.  
Coulson, Lieut. C. S. L.  
Davies, Sec. Lieut. H. H.  
Duckworth, Sec. Lieut. J. T.  
Ferguson, Sec. Lieut. J. C.  
Foot, Lieut. W. A.

Miseroy, Sec. Lieut. F. B.  
Parker, Sec. Lieut. O. S.  
Pearson, Lieut. O.  
St. Clair-Morford, Capt. A. C. (R.M.L.I.).  
Wilson, Capt. F. B.  
Yates, Sec. Lieut. A. J.

**Missing.**

Bradford, Sec. Lieut. W. W.  
Brookes, Capt. E. G., D.F.C.  
Carter, Sec. Lieut. G. L.  
Elliott, Sec. Lieut. H.  
Foggo, Lieut. N. O. M.  
Gray, Sec. Lieut. V. S. (Suff. R.).  
Hudson, Sec. Lieut. H. E.  
McConnell-Wood, Lieut. A.  
McCutcheon, Sec. Lieut. B. J.

Nuttall, Lieut. J. C.  
Pearson, Sec. Lieut. B. C. (Yorks. L.I.).  
Price, Lieut. E. J., M.C. (Aus. F.C.).  
Rogers, Lieut. F. I. (Midd'x) (S.R.).  
Taylor, Lieut. R. E.  
Wignall, Sec. Lieut. G.  
Wood, Lieut. C. L.  
Wood, Lieut. H. H.

**Published August 28th.**

**Killed.**

Booth, Sec. Lieut. E. B.  
Estcourt, Lieut. A. C. S.  
Orr, Lieut. R. S. S.  
Robinson, Lieut. A. D.

Ross, Sec. Lieut. J.  
Smith, Sec. Lieut. S. A.  
Street, Lieut. B. H. (Welsh).

**Previously Missing, now reported by German Government Killed or Died of Wounds.**

Murray, Lieut. K. W. (Brit. Col.).

**Died of Wounds.**

Nash, Lieut. T. S.

Ramsay, Lieut. M. O.

**Wounded.**

Adamson, Lieut. D. B.  
Bremicker, Lieut. C. T.  
Buckley, Sec. Lieut. H.  
Downes, Capt. C. N.  
Ferrier, Lieut. A. J. (Shrops. L.I.).

Hayes, Capt. T.  
Jackson, Lieut. H. (Maltese Mil.).  
Saville, Sec. Lieut. W. C.  
Seaton, Sec. Lieut. J. E.

**Missing.**

Baird, Sec. Lieut. R. O.  
Butterworth, Sec. Lieut. H.  
Carpenter, Lieut. F.  
Dore, Capt. W. H.  
Emtage, Sec. Lieut. J. E.  
Gordon, Lieut. J. A. (Brit. Col.).  
Hawley, Lieut. A. C. R.  
Hill, Sec. Lieut. S. J.  
Jones, Sec. Lieut. J. W.

Mayo, Capt. A. J.  
Mills, Capt. K. C.  
Musgrove, Sec. Lieut. H. S.  
Pitt-Pitts, Lieut. W. J.  
Reveley, Lieut. P. T. A.  
Wallace, Sec. Lieut. J. E.  
Willis, Sec. Lieut. P.  
Yates, Lt. J. A.

## Back from Germany.

THE following officers, who were prisoners in Germany, have now arrived in England:—Sec. Lieut. H. B. O. Mitchell, M.C., R. Innis. Fus., attd. R.F.C.; Capt. D. Owen, N.S. Regt. (Can. Force), attd. R.F.C.; Lieut. J. M. Atkinson, A.S.C., attd. R.F.C.; Lieut. J. Fairbairn, R.F.C.; Sec. Lieut. K. L. Golding, R.F.C.; Lieut. P. F. Heppell, R.F.A., attd. R.F.C.; Lieut. E. L. Heyworth, R.F.C.; Lieut. K. S. Morrison, R.F.C.

## Aerial Mails in Canada.

It is reported that a weekly aerial letter mail service is shortly to be established between Toronto and Ottawa. The

actual work of carrying it out will be entrusted to R.A.F. officers.

## M.M. for Brave Nurse.

It was announced in the *London Gazette* of August 23rd that the King has approved of the following award of the Military Medal for distinguished service in the Field:

Staff Nurse PEARL ELIZABETH CORKHILL, Aust. A.N.S.—For courage and devotion on the occasion of an enemy air-raid. She continued to attend to the wounded without any regard to her own safety, though enemy aircraft were overhead. Her example was of the greatest value in allaying the alarm of the patients.



# THE A.E.G. ARMoured AEROPLANE.

*Issued by the Technical Department (Aircraft Production) Ministry of Munitions.*

This machine was brought down by an R.E.8 of 21st Squadron, near Hinges, on May 16th, 1918. It bears the date February 3rd, 1918, stamped on the main planes, and also on portions of the fuselage, and is the first of its type to have been secured.

This aeroplane is designed for the purpose of carrying out offensive patrols against infantry, and is furnished with armour, which affords protection for its personnel. This armour appears, however, to be more or less experimental. In general construction it closely follows the lines of the A.E.G. twin-engined bomber G. 105, reported on in I.C. 607, though the arrangement of the power plant is, of course, entirely different. A steel tubular construction is used practically throughout. The machine was badly crashed, and some details are, therefore, not available; but the general arrangement drawings at the end of this report may be regarded as substantially accurate.

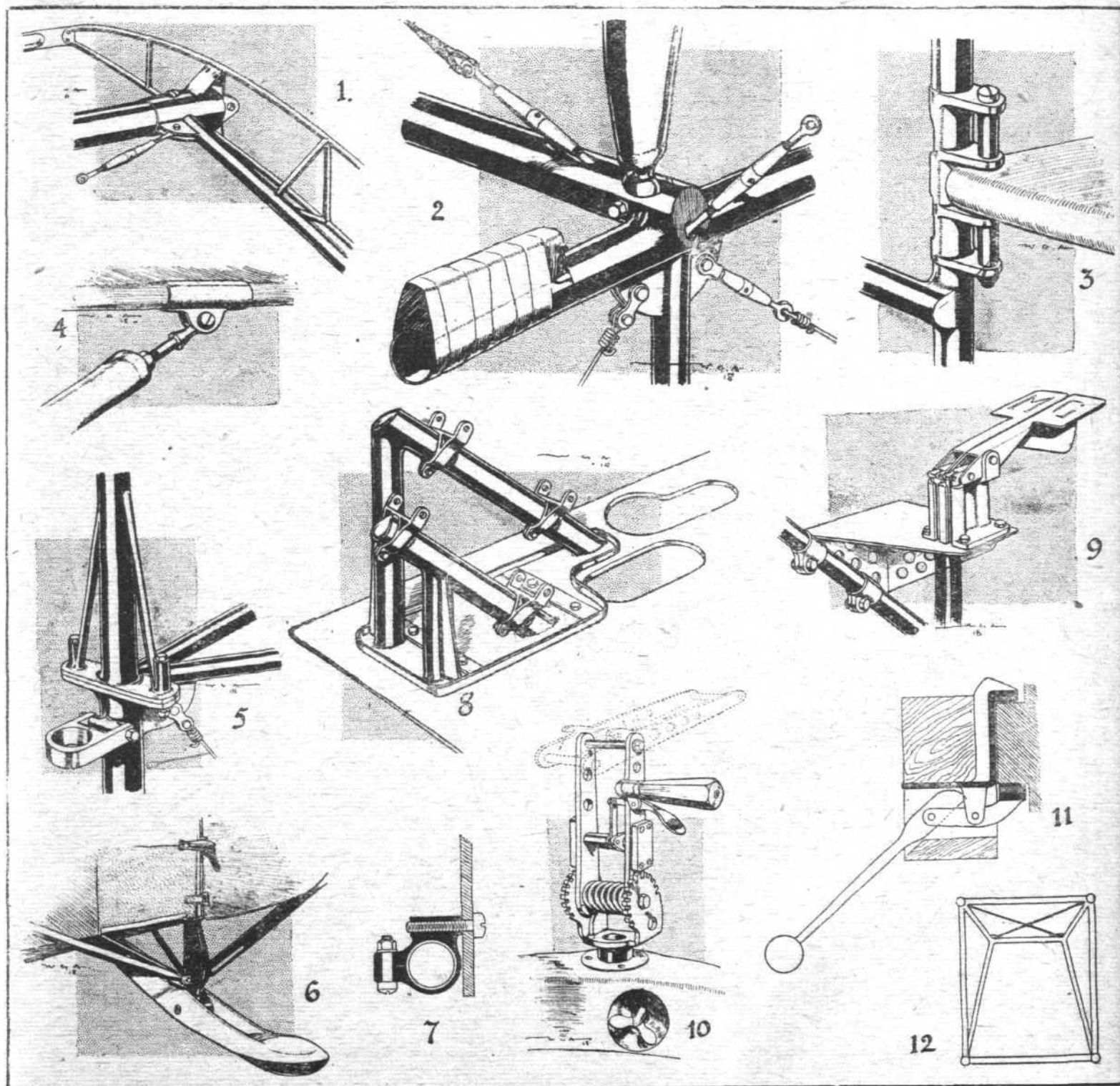
The leading particulars of the machine are as follows:—Area of upper wings, 190.4 sq. ft.; area of lower wings, 168 sq. ft.; total area of wings, 358.4 sq. ft.; area of upper aileron, 11.2 sq. ft.; area of lower aileron, 10 sq. ft.; area of tail plane, 9.4 sq. ft.; area of fin, 7.6 sq. ft.; area of rudder, 6 sq. ft.; horizontal area of body, 48.6 sq. ft.; side area of

body, 54.8 sq. ft.; cross sectional area of body, 14.4 sq. ft.; area of side armour, 33 sq. ft.; area of bottom armour, 29.4 sq. ft.; area of armour bulkhead, 10.4 sq. ft.

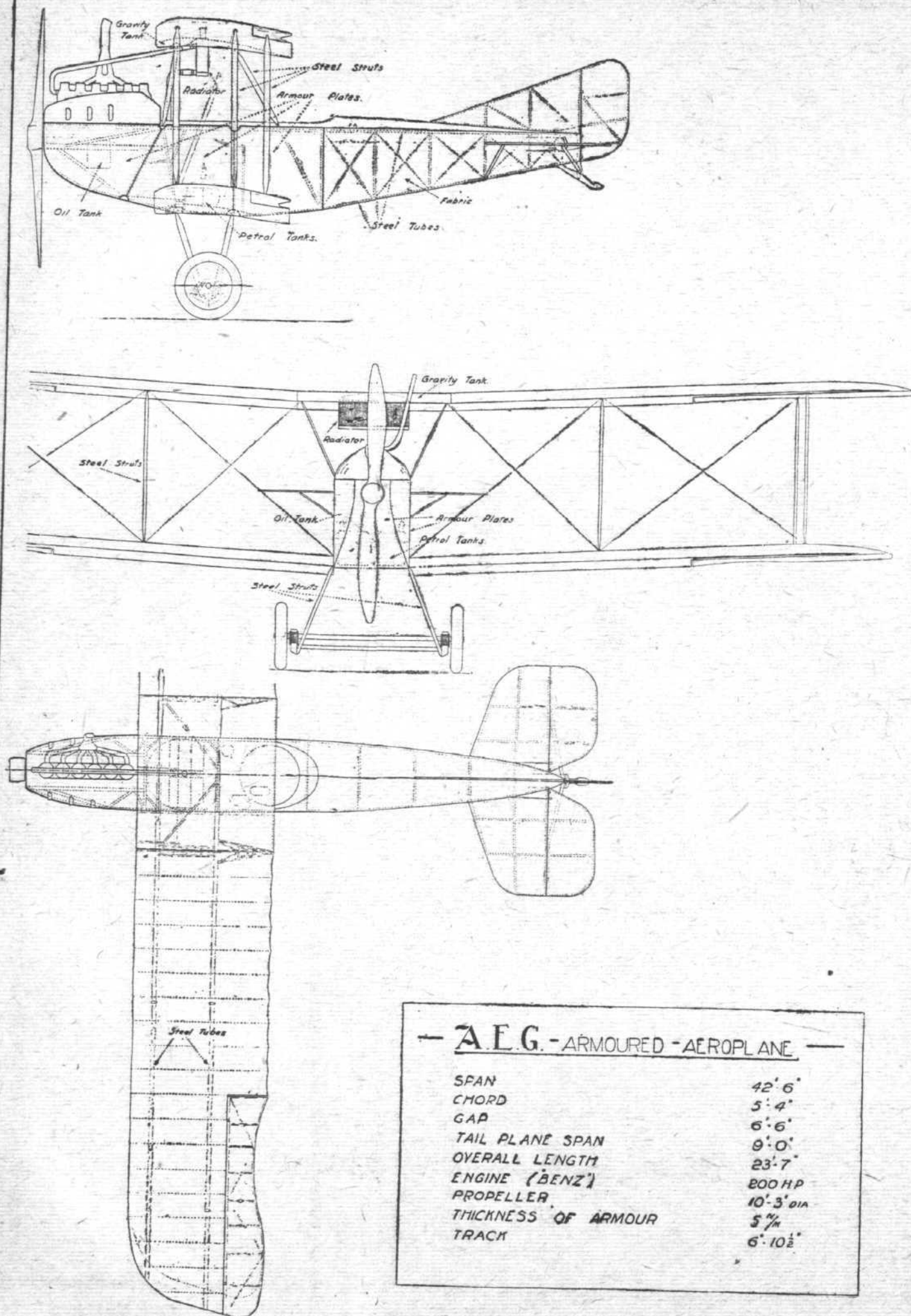
Engine, 200 h.p. "Benz." Crew—pilot and gunner, 360 lbs.; armament—three guns; petrol capacity, 38 galls.; oil capacity, 3 galls. The principal dimensions are shown on the general arrangements drawings.

## Wings.

The manner in which the wings are constructed is exactly as shown in the report of the A.E.G. bomber—i.e., the spars consist of two steel tubes 40 mm. in diameter by .75 mm. thick. At their ends the upper and lower surfaces of the spars are chamfered away, and flat plates welded in position, so as to provide a taper within the washed-out portion of the wing tips. The wings were, unfortunately, so badly damaged that no accurate drawing of their section can be taken, but there is evidence that this very closely follows the section of the bomber, which has already been published. The ribs are of wood, and between each main rib is placed a half-rib joining the front spar to the semicircular section wooden strip which forms the leading edge. The wing construction is strength-



Figs. 1 to 12.



— A.E.G. - ARMoured - AEROPLANE —

SPAN	42' 6"
CHORD	5' 4"
GAP	6' 6"
TAIL PLANE SPAN	9' 0"
OVERALL LENGTH	23' 7"
ENGINE (BENZ)	800 H.P.
PROPELLER	10' 3" dia
THICKNESS OF ARMOUR	5 7/8"
TRACK	6' 10 1/2"

The A.E.G. armoured aeroplane.



ened by two light steel tubes passing through the ribs close behind and parallel to the leading spar, which are used for housing the *aileron* control wires. The bracing against drag consists of wires and transverse steel tubes welded in position. At the inner end of the wings special reinforced ribs of light gauge steel tube are provided. The method of construction at this point is clearly shown in Fig. 1, which also indicates the manner in which the bracing tube is welded to a socket driven on the main spar. The spars are attached to the *fuselage* by plain pin joints.

#### Centre Section.

The centre section of the upper surface is constructed in a similar manner to that of the wings, except that it is considerably reinforced, and the spars are larger in diameter. The leading spar has a diameter of 51 mm. and the rear spar 45 mm. The centre section is secured to the *fuselage* by a system of stream-lined steel struts, the feet of which terminate in ball-ends dropped into sockets, and there bolted in position. One of these struts is shown in Fig. 2. The centre section contains an auxiliary gravity petrol tank, and also the radiator, and is, therefore, substantially braced with steel tube transverse members. The wings are set with a dihedral angle of approximately 6 deg.

#### Ailerons.

The *aileron* framework is of light steel tube throughout, the tube forming the trailing edge being flattened into an elliptical section. The ribs are fixed by welding. The framework of the *aileron* on the upper wing is reinforced by diagonal bracing of light tube.

#### Struts.

These are of light steel tube stream-line in section, tapered at each end, and terminating in a socket which abuts against a ball-headed pedestal carried on the wing spars; through the socket and the ball is passed a small bolt. The manner in which this attachment is carried out is exactly similar to that described in I.C. 607.

#### Fuselage.

The whole of the *fuselage* is built up of steel tubes welded together, and having affixed at their junctions sheet steel lugs, which serve as the anchorage for the bracing wires. The diameter of the *longerons* and of the frame verticals is 20 mm., except the last three members adjacent to the tail, of which the diameter is 16 mm. The welding throughout the *fuselage* appears to be of very high quality. In Fig. 2 is illustrated a joint, which occurs in the *fuselage* immediately in front of the pilot's cockpit. The *longeron* is, from this point to the rear of the gunner's cockpit, fitted with a wooden strip taped in position. This joint shows the method in which the cross bracing wires are furnished with an anchorage. In one or two points in the frame construction the bracing wire lies in the same plane as the transverse tube, and to allow for this a diagonal hole is drilled through the tube and filled in with a small steel tube welded in place.

#### Engine Mounting.

This consists of a triangulated arrangement of steel tubes carrying hollow rectangular section steel bearers, on which the crank chamber is slung. The bearers are well trussed both in the vertical and horizontal planes, and are shown in dotted lines in the general arrangement drawings. The engine bearers themselves are 2 mm. in thickness, and have an approximate section of  $2\frac{1}{16}$  ins. by  $1\frac{1}{2}$  ins.

#### Tail.

The empennage possesses no particular points of interest, the planes having the usual steel tubular framework. The tail plane is not fitted with any trimming gear, but a method of adjustment is provided. This is shown in Fig. 3, which is self-explanatory. The diagonal struts which proceed from the base of the *fuselage* to the tail plane spar are fitted at each end with a method of adjustment shown in Fig. 4, allowing them to be extended as required according to the particular socket which is used to carry the leading edge of the tail plane. Neither the elevators nor the rudder are balanced. The rudder post is mounted on the end of the *fuselage*, as shown in Fig. 5, in which it will be seen that the vertical frame tube of the fin is very stoutly attached to the frame by a triangulated foot.

#### Landing Gear.

This is of the usual A.E.G. type, and is furnished with shock absorbers consisting of metal coil springs in direct tension, as is clearly shown in the general arrangement drawing.

The landing carriage axle has a diameter of 55 mm. The landing carriage struts, which are of similar section to those used between the planes, measure 70 mm. by 37 mm. At their upper ends they are furnished with ball and socket attachments similar to those of the interplane struts.

The wheels are fitted with 810 by 125 mm. tyres, and the track is 6 ft. 10½ in.

The tail skid is unusually heavy, and it is a built-up construction of welded sheet steel. It is mounted on a stout tail post, which is reinforced by four stream-line steel diagonals. The forward end of the tail skid projects inside the *fuselage* and is there provided with four steel springs in direct tension. A sketch of the tail skid is given in Fig. 6.

#### Control.

This consists of the usual double-handled lever mounted on a transverse rocking shaft, which carries the elevator control cranks at each end. The upper *aileron*s are worked positively by wires which pass over pulleys on the wing spars at the outer struts, the outer and lower *aileron*s being connected by a stream-line steel tubular strut.

#### Engine.

The 200 h.p. Benz engine possesses no new features, and has already been made the subject of an exhaustive report.

#### Petrol System.

Underneath the pilot's seat are the two main petrol tanks, each of which contains 80 litres (equal to 16 gallons). These tanks are of brass, and are fitted with Maximall level indicators. The gravity tank, containing 27 litres (equals 5½ gallons) is embedded in the centre section of the upper plane, where it forms the leading edge on the left-hand side. This tank is made of lead-covered steel. Cocks are provided, so that either the gravity tank or the pressure tanks, separately or together, can feed the carburettor.

It is of interest to note that the chamber which is used in connection with the Benz petrol supply system is not, as is usually the case, contained in the main tank, but is a separate fitting mounted on the side of the engine.

#### Radiator.

The radiator is of the Daimler-Mercedes type, measuring  $32\frac{1}{2}$  ins. long by  $11\frac{1}{2}$  ins. high and 6 ins. deep. This is fitted with imitation honeycomb tubes, of which there are 118 running vertically, each being fitted with 48 gills. The radiator is carried in a steel cradle, into which it is easily inserted from above, and thus in turn is supported on specially built-up steel ribs. It is placed so that the tank which forms the upper part of the radiator lies about flush with the centre section of the top plane. The shutter or flap for controlling the water temperature is made of 3-ply wood stiffened with a light steel framework, and is mounted immediately behind the radiator, being worked by a handle within reach of the pilot. This handle is provided with a rack and pawl device. The shutter is  $3\frac{1}{2}$  ins. deep, and is capable, therefore, of covering up about one-third of the total radiator surface. It will be noted that the position of the shutter behind the radiator is unusual.

#### Armour.

Protection for the pilot and gunner is afforded by armour, which is shown in the general arrangement drawing in thick lines. There are three panels at each side, and three panels at the bottom of the *fuselage*, an armour bulkhead being placed at the rear of the gunner's cockpit to protect him from behind. The armour is 5.1 mm. thick, and its total area is 105.8 sq. ft. The weight of the armour is thus approximately 860 lbs. Careful tests have been made to ascertain the effectiveness of this armour, and the following table gives the ranges at which these plates are safe or unsafe against penetration by bullets of various types. These figures may be taken as correct within the limit of a practical firing test.

Ammunition.	Angle to Normal degrees.	Safe range		Unsafe range
		yards.	yards.	
German A.P. ..	0	—	600	
	15	500	400	
	30	400	300	
Mark VII. P. {	0	probably 700	600	
	15	400	300	
	30	300	200	
German Spitze	0	150	100	
	15	100	50	
	30	50		
Mark VII. ..	0	50		
	15	50		
	30	50		

The armour is undoubtedly too light to afford protection against British armour-piercing bullets fired from the ground at a lower height than 500 ft., while a machine armoured with it would have to fly at, at least, 1,000 ft. to be safe from all but a very low percentage of hits.

The armour does not appear to have been employed, as it might well have been, in a structural capacity—i.e., it is simply an attachment to the framework, to which it adds no material strength. Its appearance seems to point to the fact



that it had been added by way of experiment, and that it was of a more or less makeshift character. It had, for instance, evidently been necessary to open out existing holes and cut new holes in the course of erection. The armour is attached by set screws to clips clamped on the fuselage members, as shown in Fig. 7.

## Armament.

In this machine the pilot is not provided with a gun, but the observer has to control three, of which two (Spandau) are fixed on the flooring of his cockpit, whilst the other (Parabellum) is carried on a rotatable mounting.

With regard to the fixed guns, these are secured to a couple of tubular steel brackets, mounted as shown in Fig. 8. The oval-section steel tubes, of which these brackets are composed, are welded to a light steel base, which forms a sort of tray, and is in turn bolted to the panel of armour which forms the floor of the cockpit.

Adjacent to these two guns, which fire forward at an angle of 45 deg., is a bracket carrying the belts of ammunition, which are fed from a large rotating drum.

In the right-hand front corner of the pilot's cockpit floor is a circular hole, which he would appear to use for sight purposes. The fixed guns are controlled by Bowden wires and triggers mounted on a diagonal frame member, convenient to the gunner's right hand, as shown in Fig. 9. The movable gun is of the Parabellum type, and the mounting is of the usual built-up wood variety. The gun cradle is, however, novel, the fixture for this purpose being illustrated in Fig. 10. It appears to be rather more handy than the usual German device, but is by no means lacking in weight. This fitting was in a very badly smashed condition. The vertical carrier is swivelled at its base, and is secured in position by sliding bolts engaging with teeth cut in the turned-up base plate. These sliding bolts are worked by a direct acting thumb lever. The turn-table is made of a single hoop of wood reinforced

at the point where the gun is mounted by glued-on strips of ply-wood. A locking device of the type shown in Fig. 11 is fitted.

The transverse bracing in the immediate rear of the gunner's cockpit, at which point is mounted the armour bulkhead, suggests that it was the original intention for this aeroplane to carry a gun or guns firing downwards and backwards through a hole in the fuselage. The transverse arrangement of steel tubes and bracing wires is shown in Fig. 12.

## Wireless and Heating.

The machine is fitted with the usual wireless leads and apparatus for heating, the dynamo being carried on a bracket attached to the fuselage immediately in front of the pilot's seat, where it is directly driven from the engine through a hand-controlled clutch. No wireless fittings, other than the dynamo and the leads, were found on the machine.

## Instruments.

The instruments fitted to this machine are of standard type, and possess no new features of interest.

## Fabric and Dope.

The fabric throughout is of good quality, but the dope appears to have been badly applied, as in many points it had completely peeled off the fabric.

## Camouflage.

The colours used are dark purple and dark green, and in contradistinction to the usual method by which they are arranged in well-defined polygons, are applied so as to give a cloudy effect, and appear to have been sprayed on.

## Steel Analysis.

A sample of the wing spar yields the following analysis:—

Carbon ..	.098 per cent.	Phosphor .	.014 per cent.
Silicon ..	.011 per cent.	Manganese	.461 per cent.
Sulphur ..	.017 per cent.	Chromium	.036 per cent.

## London's Lord Mayor Over Rome.

APPARENTLY not the least enjoyable event of the Lord Mayor's visit to Rome was his trip on August 23rd in a military dirigible. It was a bright sunny atmosphere, and there was a splendid view of the Apennines and the Mediterranean coast. The Lord Mayor said it certainly was a splendid means for a traveller in a hurry to study the ancient and modern topography of the Eternal City. The Lord Mayor on Sunday, accompanied by Signor Chiesa, Commissioner of Aeronautics, visited a number of factories at Genoa.

## Lord Weir on Aviation.

INTERVIEWED by Mr. Edward Marshall, Lord Weir has given some of his far-sighted views with regard to the peace-time uses of aviation. He said:—

"One great satisfaction of connection with the Air Ministry is the conviction that one's efforts here must tend not alone toward furthering the destructiveness of war, but must develop forces which will be of great constructive value when peace comes. Unfortunately, at present we must consider the destructive effort first, last, and all the time; but it nevertheless remains the fact that in so considering it we cannot fail to be developing many abilities which will have high peace-time value. The manufacturers of all types of aircraft which I have catalogued as being necessary to the successful conduct of our air offensive against Germany will after the war manufacture aircraft which will tend to increase the scope of commerce, facilitate the study of the world's now hidden places, transport passengers with hitherto unknown rapidity, accelerate postal service, and otherwise increase the fulness of existence.

"We have come to the conclusion that to commence a system of aerial posts at present would inevitably result in the waste of effort which might be devoted more usefully to the battle front. We are even a little doubtful of the effectiveness of trying to train fighting airmen through the medium of air-postal services. At present, we believe, every ounce of the Allies' air energy may be put very profitably into actual warfare. The training of an aerial postman and a war-aviator must differ most materially."

## More Italian Propaganda Work.

THE *Widenski Dennik* states that Italian aeroplanes lately appeared over Agram, dropping on the city and environs a large number of manifestoes. People thought at first that they were Austrian machines come to make propaganda for the war loan, but it was soon found that they were enemies, dropping manifestoes in favour of the Slav idea. In one machine was M. Samlinarz, a Deputy in the Hungarian Parliament and member of the Serbo-Croatian League, who on the outbreak of war fled to Russia and then came on to Italy.

## Ten Weeks' Results in Italy.

INFORMATION was published in Rome on August 24th to the effect that during the past 70 days 302 enemy aeroplanes and 10 balloons have been brought down on the Italian Front. One hundred and fifty-three of the aeroplanes and five of the balloons were brought down by the British.

The Italians lost 24 aeroplanes, and the British 13 machines and four balloons.

## A Slander Refuted.

THE slander published in the *Kieler Neueste Nachrichten* on June 15th, under the heading "English Brutality," has been amply refuted. The paper alleged that in July, 1917, when H.M. trawler *Iceland* rescued the crew of a German seaplane, Lieut. Douglas, R.N.R., and his crew stole all articles of value from their prisoners, on the plea that they wanted the articles as souvenirs, while a sick berth steward spat in a glass before giving one of the German officers a drink. The most severely wounded of the officers, according to the article, was clothed in his damp uniform next day without underclothes, as the latter were still quite wet. These accusations are lies. What took place has been reported by Lieut. Douglas, who states:—

"After the prisoners were taken on board my ship, Lieut. Becker, who had lost a foot, was brought into my cabin and placed on a settee, with two pillows under his head. I at once arrested the bleeding by using a tourniquet, as his thigh muscles were too strong to use the thumb. I next removed all his wet clothing, dried his skin well with a bath towel, and gave him a new singlet, shirt, drawers and stockings of my own. Then I washed his wound in warm water, using friar's balsam to remove the dirt, bound it up, and elevated his foot above his body. In response to a request for a drink I gave him a glass of brandy.

"With the assistance of two A.B.'s, I lifted the officer up and put a clean sheet on the settee, laid him down, and covered him with three blankets. Orders were given to my cook to prepare supper from the stores on board, and he provided tea, bacon and eggs, toast and butter, biscuits and cakes. Cigarettes and tobacco were given to Lieut. Becker, and I, leaving the room at his disposal, went on the bridge to navigate the ship. His heavy clothes were put on the engine-room cylinders to dry with the other prisoners' clothes. Lieut. Becker wanted his mechanic with him as a companion, and his request was granted. His man was also supplied with cigarettes, and I noticed that when he came from aft he was wearing a pair of slippers of the mate's and some overalls of the engineer's. As far as I am aware, no clothes or any other articles were taken from them. The souvenirs were given by the officers to myself and my crew, two of the articles being a gold wristlet watch and a silver one, given to the signaller, and cook. . . . I did my very best for these officers."



## AIRISMS FROM THE FOUR WINDS.

SEVERAL English newspapers have referred during the last week to the crossing of the Atlantic, as described in the latest issue to hand of our American contemporary *Flying*, as if the feat had been actually accomplished. The "story," as told by Alfred E. Poor, omits, even as a final word, to convey the slightest suggestion that the whole thing is but a flight of imagination, certainly somewhat cleverly worked out in detail, and therefore to the uninitiated well calculated to deliberately deceive. Which, having regard to the vast importance of the actuality of such a happening, hardly commends itself as being worth while, apparently for the mere sake of catching some of the lay press through plausibility of the hoax. In fact, taken as a whole, it is but a very "Poor" joke at the best, especially having regard to the fact that the journal publishing this concoction is the official organ of the Aero Club of America.

*Apropos* our par last week relating to the growing keenness in Ireland of recruiting for the R.A.F., Col. Robinson, the Recruiting Organiser for Dublin City and County, last week was very satisfied with the trend of things, and announced there was a good chance of getting the quota he had been asked to obtain. There was a splendid flow of recruits, with a distinct preference for going into the air. It must be looking gratifyingly healthy when the Irish Recruiting Council as early as Tuesday last week had to issue the following statement:—

"Owing to the pressure of recruits the Irish Recruiting Council has found it necessary to seek extra premises so that medical examination can be completed within the day of application."

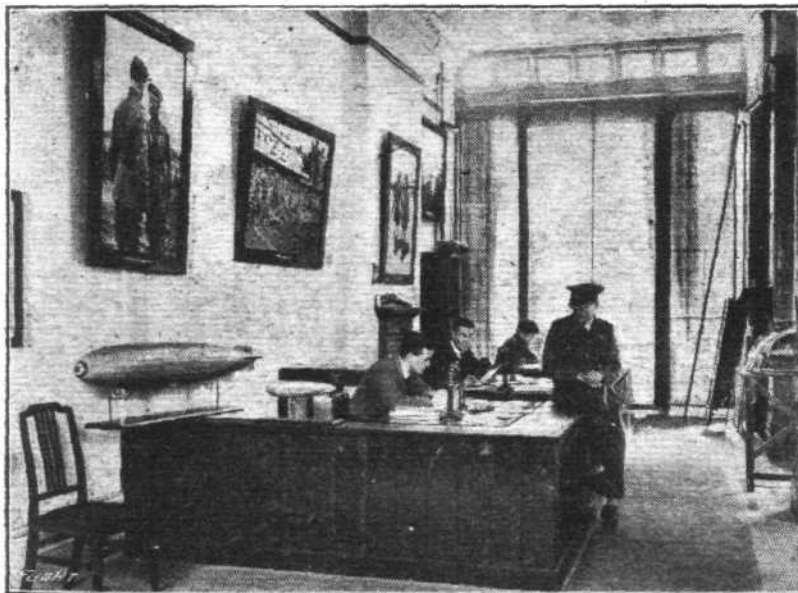
The Bhoys would hardly like to be out of that march into Berlin presently.

It's something to be thankful for that our American Allies are able to appraise the Kaiser's horrible and blasphemous hypocrisy at its real value. The "All-Liest" Frankfurt Whine has particularly angered them, apparently. Following the Hun outrages at the commencement of the war, public

opinion was slow in appreciating the abomination of the whole thing, but with the piled up horrors recognition in the States, as one correspondent puts it, gradually dawned upon the people that the codes of Geneva and The Hague had never been accepted by Germany in good faith, and to-day, despite the special pleading of university exchange professors before the United States entered the war, were now as convinced as in England that organised terrorism is part of Germany's military system. Much of the criticism one hears in America as to the Kaiser's hypocrisy cannot be printed in respectable newspapers—[we can believe it]—but the latter also manage to convey a rough impression as to their real views. The *New York Times*, for example, which is usually restrained, says: "To compare William with Attila is defamation of Attila's character. Attila had some compunction. He spared some things, but the Kaiser, in the name of military necessity, defends the most atrocious crimes his soldiers ever committed." Reprisals, it is urged here, should be part of the Allied programme, but the word more generally in favour is "retribution."

NOBODY will quarrel with "retribution" so long as we get there. It is to be hoped the Allied armies will have a chance of fighting their way through Germany to Berlin for a period of not less than six months. There'll be a lot of the boys who'll prefer that to going by train.

WAR in the air has much to answer for. Judging by a series of police court cases the other day in which the defendants were all charged with defrauding the L.B. and S.C. railway by using other folks' season tickets, it would appear as if members of all the old Scotch families had migrated to "London by the Sea" to avoid too intimate attention from the Hun air-pirates. Israel Posekoff, Louis Koransky and Leon Maintz make a sample trio of these noble old families. The only wonder is that these aristocrats are not cunning enough to wangle the fuel license business to enable them to travel by luxurious motor or even plane down to Brighton.



Any youth who has an inclination to serve his country in the Royal Air Force should have no difficulty in obtaining full information as to his chances of getting on. He need have no hesitation in entering the bureau which has just been opened at 82, Strand. It is not a recruiting office in any sense of the word, but those in charge are simply out to give the fullest information to any enquirer. The R.A.F. is full of possibilities for any healthy British boy. There is always a collection of souvenirs, as well as models of airships and aeroplanes, on view inside and in the window, and that they are interesting is sufficiently shown by the crowd which gathers, as shown in our photo. above.

Not a few well-known pilots have owned favourite dogs, and perhaps the most famous were those which belonged successively to the late Captain Gordon Bell. One was a Great Dane, "Kroshka" by name, which was a familiar feature of the Brooklands meetings in the old days, and still flourishes at Omnia Aircraft Works at Leagrave, where he is regarded by Mrs. Maurice Hewlett as absolutely indispensable to the establishment. Another of Gordon Bell's pets was a bull-pup, which fell out of a fourth storey window and narrowly missed the head of no less a personage than the Duchess of Westminster, who was walking on the pavement below. With great humanity the Duchess promptly hailed a taxi and drove the injured animal to the nearest vet., but unfortunately without avail.

In the nature of things, our pilots' pets have not always commended themselves to their owners' confreres, and there was a certain brute at Larkhill in pre-war times which did so much damage that its master, greatly against the grain, had to shoot it with his own hands, and wept copiously after the tragedy. Another much-hated animal not long ago was attached to a certain squadron at the front, and, losing all patience with his vagaries, the mess decided to settle his hash for good and all. A pine-apple bomb was hurled at the offending quadruped, which immediately retrieved the missile and started back, with the "Mills" in its mouth, towards the cluster of spectators! Of course, there was a wild stampede, the "ground speed" of the fleeing pilots being wonderful to behold, but the bomb which the dog so gaily carried duly went off, and "the subsequent proceedings interested him no more."

## RAFFASHIONS. By "A.A.B."

In the brain-cells (occupied or vacant cells) of our Statesmen a wonderful theory has germinated since the Great War has been in progress. It is now considered by the best cells expedient to place in charge of Government Departments persons who know something about the work required instead of those who have only the qualifications of a Name and Incompetency. This, of course, is a startling innovation. As the war has only been on for four years, it is at present only in the stage of experiment.

Naturally, in the Air Ministry, we expect to find the experiment in an advanced state. Take for instance the matter of the uniform. Our gallant airmen can wear quite a variety of patterns now, and the authorities are hard at work designing new ones. There appears to be a Sub-Committee on Uniforms of a permanent nature which ensures the permanency of the uniform. In fact it is anticipated that there will be a new fashion each session.

Ladies have already claimed that they should have a say (presumably the last word) in the matter of standard clothing for men, and there seems no reason why they should not be included, if they are not already, in the R.A.F. Fashion Sub-Committee. We may expect the uniform to be changed quite frequently. The ladies should be the wives, mothers, sisters or aunts—or whatever relationship it is that one usually sees with our gallant airmen—to ensure harmony between the fashions of the R.A.F. and their fair friends.

Some of our enterprising V.A.Ds. find the French Red Cross headress more becoming than their own, and it is quite frequently seen worn by our V.A.Ds. Yet our officers,

admiring French officers' caps, have not adopted them! That shows the need of Feminine Influence in these matters.

We may expect to have a Fashion Supplement to "FLIGHT" eagerly consulted by aviators and their wives—or other relationship beforementioned.

Perhaps it will become fashionable for aviators to wear feathers in their caps, indicative of a particular branch of aviation. The night flyer (in the aerial sense—not the social) would have feathers of that rapacious, nocturnal bird—the owl. The staff might appropriately wear peacock feathers. No one, of course, wearing anything in the nature of a white feather.

RUPERT—unlike most of our gallant airmen—did not go to Sunday School regularly. Even, at times, he might be seen in Piccadilly without his mother. In fact, although it seems scarcely believable, his example was not always exemplary—monastically.

Rupert had a wife—and on the theory that persons of unlike temperament have more to admire in one another than those of like temperament, they should be able to live comfortably on admiration alone.

Our hero likened his wife to a certain type of "bus" with which he learnt to fly (types, of course, we mustn't mention by name). This particular type was of a stable nature, well-balanced, and perfectly reliable under nearly any circumstances. She was not fast. If you managed her badly, and then had the sense to shut off the motive power, and only let her have her own way for a bit—"hands-off"—she would right herself.

Now, Rupert's fund of admiration was not entirely exhausted by his admiration for Mildred—that is the name of his wife. In fact, it stimulated his output—like Churchill on munitions. Rupert could also appreciate the fascination of a more dangerous type. More delicate on the control—less stable. She was not easy to "take off" and to "land." To a novice there was a risk of dangerous "side-slips." She was distinctly—rapid. From soaring far into the heavens she was inclined to bring you back to earth with undue suddenness.

The Raffashions for the spring allowed considerable scope in colour—one could wear practically any shade. Mildred could not stand pink within a quarter of a mile of her—yet Rupert had a beautiful pink uniform sent from his costumiers in the style of Rupert of Hentzau which had become so popular. He certainly looked very "sweet." Mildred was very sad, as she could not possibly be seen with him. However, Rupert bore up, with that manly spirit which we have come to expect in our aviators.

Looking through the so-called "Social Page" in a Raffashion Supplement shortly after, Mildred came across a snapshot of her dear Rupert with a most dainty little lady. Beneath the heading—"One of our Popular Musical Comedy Actresses under escort of a Gallant Flying Officer"—were the words: "Miss Claire Dove with a well-known pilot. The officer's charming uniform was of 'Claire' pink—the new shade made fashionable by Miss Dove."

Even with a stable machine it is possible to get into difficulties. Poor Rupert is now in a domestic spinning nose-dive, very near to earth. It is hoped he will put his controls "neutral" and has sufficient height to avoid a disaster.

## Attempt to Raid Paris in Daylight.

ABOUT 9.45 a.m., on August 22nd, some enemy aeroplanes, whilst reconnoitring at a great height, flew over the suburbs of Paris, but on being violently bombarded by anti-aircraft batteries and pursued by defending aeroplanes, they retreated in a northerly direction.

## Two Zepps. Adrift?

ACCORDING to a report from Christiania, a large Zeppelin drifted across the Norwegian coast near Fredrikstad at 8 a.m. on August 23rd. At 11.30 a.m. another Zeppelin was seen drifting eastwards from Sandefjord in a violent storm. It is said that the crews were on board, but had apparently lost control of the airships.

## D'Annunzio's Revenge.

"Major Gabriele d'Annunzio," says Mr. G. Ward Price in a despatch from the Italian Headquarters, "has carried out an adventurous and personal reprisal for an Austrian night air-raid during which one of the enemy machines dropped a bomb literally within a yard of his sleeping quarters. The bomb did not explode, but the thud knocked over and broke a glass from which d'Annunzio had drunk an hour before. In this the soldier-poet gaily saw a matter for personal ven-

geance, and, starting off in the afternoon with his pilot in a new type of fast weight-carrying land machine, he flew about 100 miles straight across the Adriatic Sea to Pola, dropped 14 bombs on the arsenal, and returned safely to his aerodrome. I was waiting there when he arrived, amid a round of cheers from his squadron.

"Major d'Annunzio will wear henceforth in his flights an ivory-hilted dagger. This weapon is the mark of the Italian Arditi or storm troops, and all the eight airmen who took part in the raid on Venice have been named by their comrades 'storm troops of the air.'"

## Adrift for Twelve Days.

SOME details have recently become available of the feat which won the Legion of Honour for Sub-Lieut. Langlait and the Medaille Militaire for 2nd Boatswain Dien. It appears that when 500 miles away from its station, the machine had to come down through engine trouble. They were well off the track of patrol boats, and drifted about for 12 days before being picked up. After using up their two days' rations they ate two of the carrier pigeons they had with them, and when they had used the fresh water out of the radiators they fitted up a rough still and boiled sea-water to make it drinkable.





### Casualties.

**C** Lieut. LIONEL ARTHUR ASHFIELD, D.F.C., R.A.F., who was reported missing on July 16th, and now reported killed, was the second son of Charles and Ida Ashfield, of Hazelhurst, Frant. His age was 20.

Lieut. EDGAR BRANDON, Observer, R.F.C., who was killed in action on August 11th, aged 27, was the third son of the late Edgar Brandon and Mrs. Brandon, of Newlands, Clapham Road, Bedford.

Lieut. ARTHUR CHARLES SOTHERON ESTCOURT, M.C., R.A.F., who was killed on August 8th, was the youngest son of the Rev. E. W. Sotheron Estcourt, of Estcourt, Gloucestershire, and rector of Long Newnton, Wilts, and was born on September 26th, 1893. He was educated at St. Aubyn's, Rottingdean, and Gresham's School, Holt, Norfolk, from which he gained an open mathematical scholarship at Magdalene College, Cambridge, in January, 1912, being also awarded an exhibition by the Fishmongers' Company. Soon after the outbreak of war he joined the Cambridge O.T.C., and received a commission in the Wiltshire Regiment on November 19th, 1914. He was ordered to the front about a year later, and was posted to a battalion of the Gloucestershire Regiment. Early in the following year he was detached for service with a Trench Mortar battery, of which from time to time he was in acting command, and it was for his distinguished service in this capacity that he was awarded the Military Cross. He was wounded on August 8th, 1916, and again on August 22nd, 1917. Early this year he transferred to the Flying Corps. Passing out at the head of the list in his flying school examination at Easter, he was sent out to the front at the beginning of May as an observer. On August 8th he went out in the morning on patrol over the lines, and he and his pilot were both found dead later.

Lieut. PHILIP EDWARD LINDNER, R.A.F., who was killed in action on July 21st, was the youngest son of F. W. Lindner, Tiddington, Stratford-on-Avon.

Lieut. J. L. PAYTON, R.A.F., who was killed in action on August 16th, was the fourth son of the late Hugh Payton, of Harborne, and Mrs. Payton, Maristow, Torquay.

BERNARD JOSEPH TOLHURST, who was reported missing on April 22nd, 1917, and known to have been killed on that day in aerial fight, was the son of Mr. and Mrs. Tolhurst, of Southend-on-Sea, and Ditton Court, near Maidstone.

Maj. CHAS. DAWSON BOOKER, D.S.C., R.A.F., who died on August 13th, from wounds received in action, aged 21, was the elder son of J. Dawson Booker and Mrs. Booker, The Cottage, Burnt House, Speldhurst, Kent.

Maj. BERTRAM HOPKINSON, C.M.G., F.R.S., who was killed on August 26th in a flying accident near London, was the eldest and last surviving son of the late Dr. J. Hopkinson, F.R.S., and was born in January, 1874. He had been Professor of Mechanism and Applied Mechanics at Cambridge since 1903, and was a Professional Fellow of King's. He was educated at St. Paul's School and Trinity, Cambridge. He was called to the Bar in 1897. On his father's death, however, in the following year, in an Alpine accident, he started in business as a consulting engineer. He was a member of the Institution of Civil Engineers, was elected a Fellow of the Royal Society in 1910, and was created a C.M.G. in 1917. He was the author of several scientific and technical papers read before the Royal Society, the Institution of Civil Engineers, the I.A.E., and other scientific bodies. He carried out a good deal of experimental work on the phenomena of explosion, investigating the precise course of events which happen when a mixture of gas and air is burnt in conditions such as obtain in the cylinder of internal combustion engines. In 1903 he married the eldest daughter of Mr. Alexander Siemens. The funeral will be a military one, and will take place at Cambridge on Friday at 2.30.

Lieut. THOMAS STUART NASH, who died of wounds received on August 8th, was born in 1889, the son of the Rev. Cecil

Nash, of Kincardine O'Neil, Aberdeenshire. He went to the Straits Settlement nine years ago in the employment of Messrs. Boustead and Co. On the outbreak of war he volunteered for service, and eventually received a commission in the R.F.C. After training in England he went out to the front early this year.

Capt. THOMAS PHILLIPS, King's Own (Royal Lancaster Regt.) attached R.A.F., who died in a military hospital in Wiltshire from severe burns received in a flying accident, was the elder son of Mr. John Phillips, hotel proprietor, Lancaster. He joined three years ago from Lancaster Grammar School, of which he was captain, having just won a classical exhibition at Cambridge. He served two years at the front, and transferred to the R.F.C. last November.

C. W. S. ROBINSON (SYDNEY), Independent Air Force, who died on August 8th, at a hospital abroad, through an accident on service, aged 22, was the second son of Mr. and Mrs. F. Robinson, Buxar, India. His elder brother was killed in May, 1917.

Flight Commander LEOPOLD VICTOR ARNOLD ROYLE, M.C., R.A.F., who was killed in action on August 17th, was the elder son of Mr. Arnold Royle, C.B., and of Mrs. Royle, of Albany Lodge, Esher. He was appointed to the rank of flight commander in March of this year.

Lieut. and Instructor PETER WOLFERSTAN RYLANDS, R.A.F., who was killed while leading his squadron in firing practice on August 9th, was the eldest son of Mr. and Mrs. Thomas Kirkland Rylands, of The Down House, Tockington, Glos. He was educated at Durnford and Marlborough, and obtained his commission in the R.F.C. in July, 1917, becoming instructor in November of that year.

Lieut. J. SCRACE, R.A.F., who was killed in a flying accident on August 24th, aged 26, was the only son of Mr. and Mrs. Scrace, of Beacon Lodge, Chatham, Kent. He was an Honoursman of Peterhouse and Ridley Hall, Cambridge, and had been in the Army three years.

Lieut. JOHN ALLINGHAM CHURCHILL TAYLER, R.N., R.A.F., who was killed on August 7th, as the result of an aeroplane accident, was the younger son of Mr. and Mrs. A. Chevallier Tayler, formerly of Grove End-road, N.W. He was educated at Arnold House and Stonyhurst College, joined the R.N. College, Greenwich, in November, 1917, continued his training at Vendome and Cranwell, and went out to the front in April, 1918. His elder brother, who holds a commission in the Royal West Kent Regiment, is a prisoner of war in Germany.

Lieut. J. B. WALLACE WOLSTENHOLME, R.A.F., who was killed on August 20th in England, aged 23, was the elder son of James Wolstenholme, of 127, Melrose Avenue, Cricklewood.

### Prisoner of War.

Lieut. HUGH TUSSAUD, R.A.F., who was recently missing after a flight over the German lines, is now reported to be a prisoner of war, slightly wounded. He is a son of Mr. John Tussaud, and has four brothers officers in the Army, two being like himself in the Royal Air Force.

### Married.

Capt. H. W. BUNBURY, Suffolk Regt., attd. R.A.F., youngest son of Sir Henry Bunbury, Bt., and Lady Bunbury, of the Manor House, Mildenhall, Suffolk, was married on August 24th at St. James's, Piccadilly, to KATHARINE MARGARET, only daughter of Mr. and Mrs. R. A. MURRAY, Pirniehall, Drymen Station, Dumbartonshire.

Maj. A. G. R. GARROD, M.C., R.A.F., was married on August 23rd, at the Garrison Church, Rouen, France, to Sister C. EVELYN BRAY, R.R.C., Queen Alexandra's Imperial Military Nursing Service.

Maj. THOMAS VAUGHAN LISTER, R.A.F., was married on August 22nd, at Tewkesbury Abbey, to DORIS WINIFRED, only child of Mr. and Mrs. G. F. WILKES, Townshend House, Sedgley.



# THE ROYAL AIR FORCE

*London Gazette, August 20th.*

The following temporary appointments are made:—  
**Group Commander.**—Col. (Temp. Brig.-Gen.) F. R. Scarlett, D.S.O., and to retain his temp. rank whilst so employed; Aug. 12th.

**Colonel (Equipment).**—Maj. (Temp. Lieut.-Col.) M. Spicer, and to be Temp. Col. whilst so employed, vice Lieut.-Col. (Temp. Col.) R. H. Austin-Sparks (killed); Aug. 6th.

**Staff Officers, 1st Class.**—Capt. (Temp. Maj.) D. Harries, and to be Temp. Lieut.-Col. whilst so employed, vice Capt. (Temp. Lieut.-Col.) F. W. Lucas, M.C.; June 26th.

**Staff Officers, 2nd Class.**—And to be Temp. Maj. whilst so employed:—Capt. G. B. McClure; June 1st. Lieut. (Temp. Capt.) H. O'N. de Segrave; June 22nd. Lieut. R. A. Pennington; July 4th.

## Flying Branch.

**Cpts. to be Temp. Maj. whilst employed as Maj. (A.):**—R. B. Maycock; Aug. 1st. L. G. S. Payne; Aug. 5th. R. D. Oxlard; Aug. 8th.

**Lieuts. (Temp. Cpts.) to be Temp. Maj. whilst employed as Maj. (A.):**—F. H. M. Maynard; June 17th. A. W. Bird, D.S.O., T. C. Thomson; Aug. 1st. N. Brearley, D.S.O., M.C.; Aug. 2nd. A. B. Shearer; Aug. 7th. C. J. Truran; Aug. 12th. Capt. (Temp. Maj.) R. M. S. Veal to be Capt. (A.) from (T.), and to be Hon. Maj.; July 25th.

**Lieuts. to be Temp. Cpts. whilst employed as Cpts. (A.):**—R. B. Sutherland; July 23rd. H. A. V. Hill, P. W. Spurr; Aug. 3rd. J. McBain, K. C. Mills; Aug. 6th. G. Bryers; Aug. 7th. D. M. Deighton, G. L. Graham, W. C. Hillborn, S. H. McCrudden, N. P. Playford, R. N. Smith, H. W. Taylor, R. Turner (Hon. Capt.), D. Watson; Aug. 9th. T. G. Jefferies, F. Lord, A. MacGregor; Aug. 10th. S. E. Toomer; Aug. 11th. L. R. Evershed, I. W. Leiper; Aug. 16th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A.):—J. R. Baisley, R. W. Ball, G. A. Beatty, C. R. Benedict, J. W. F. Clarke, G. T. Cunningham, C. T. Dempsey, E. A. Dietrich, D. J. Dillabough, H. R. French, J. C. Gow, J. Gribbin, H. A. Halliday, W. E. Hampel, R. C. Hargrave, S. W. Holt, W. A. Jackson, E. R. Jones, J. J. Kann, S. Kenna, C. Lindsay, C. A. Lovell, U. Macfarlane, H. Mackay, A. P. McAvoy, G. C. McCallum, A. E. W. Middleton, L. J. Mousseau, H. F. Nase, G. H. Palmer, W. J. Parker, H. H. Peterson, J. A. Peterson, F. E. Place, L. W. Prime, L. H. Rice, R. B. Robinson, T. A. Roberts, G. M. Ross, J. C. Sahloff, M. J. Swanston, A. B. Taylor, A. H. Thompson, T. A. Valles, J. W. Vaughan, H. B. Ward, G. E. Warren, S. Whitaker, D. O. V. Wigle, F. G. Wright; July 18th.

Lieut. A. Sattin, to be Lieut. (A. and S.), from Obs. Off.; July 16th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A. and S.):—N. E. Lashbrook, J. M. Letson, H. T. Kempton, P. W. Mackintosh, H. St. J. Smith, C. B. Gibson; May 27th. C. H. Moss; June 21st. L. A. Williamson, J. Nicolson; June 22nd. W. N. Owen; July 6th. J. J. Luckley; July 8th. A. V. Green; July 9th. J. C. Dunbar, A. P. Murray; July 10th. J. A. Matthews; July 11th. O. D. Alward, E. A. Copp; July 14th. S. A. Thomson, A. S. McPhail; July 15th. C. V. Bradley; July 16th. J. E. Sewell, R. T. Stewart, H. A. Nester, C. E. Irving, W. T. Brewster, P. A. Templeton, E. H. Maw; July 17th.

Sec. Lieut. J. T. Menzies (R.F.C., S.R., on prob.) is confirmed in his rank as Temp. Sec. Lieut. (A. and S.); June 26th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A. and S.):—C. V. Lock; May 26th. G. W. Smart, G. Thomson; June 14th. A. J. Attwood; June 19th. W. G. Cooke; June 24th. W. L. Miller; June 27th. J. H. Judd; July 9th. W. B. Richardson; July 18th. A. W. Emery; July 27th. T. Phillips; July 28th. T. Treise; July 29th. J. F. Christopher-son, W. J. Bowler; July 31st. D. E. Hall; Aug. 2nd. C. G. Milne; Aug. 4th. J. D. Lightbody; Aug. 7th.

The following prob. Flt. Offrs. (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (A. and S.):—A. E. Betts, G. Fisher, S. R. Pragnell; July 24th.

The following are granted temp. comms. as Sec. Lieuts. (A. and S.):—W. D. Brownlee (Sec. Lieut., High. L.I., S.R.); July 8th. H. Toft (Temp. Sec. Lieut., R. War. R.); July 14th. B. P. Springett (Temp. Lieut., Trg. Res.), and to be Hon. Lieut.; July 16th. S. G. Neal; Aug. 19th.

W. A. Moore (Capt., Rif. Brig., S.R.) is granted a temp. comm. as Sec. Lieut. (A. and S.), and to be Hon. Capt.; May 30th. (Substituted for notification in *Gazette* Aug. 2nd.)

R. G. Fordham (late Sec. Lieut., R.F.C., S.R.) is granted a temp. comm. as Sec. Lieut. (Dir.); Aug. 19th.

The following are granted temp. comms. as Sec. Lieuts. (K.B.):—A. R. B. Woodiwiss (Sec. Lieut., R. Iris R.); July 20th. J. W. Smith (Sec. Lieut., R.F.A., S.R.); July 24th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (Ob. Offrs.):—J. A. Bramley; June 24th. M. P. Dalrymple, F. W. Chadwick; July 14th. P. A. Clayton, O. Gibb, J. Tremain; July 15th. E. R. Ludlow, J. W. Mettam, W. E. Hedley; July 16th. A. H. Hollis; July 19th. H. Walker, W. P. Purvis; July 27th.

Sec. Lieut. G. L. Shaw to be Sec. Lieut. (Observer Offr.), from (T.); July 12th.

Lieut. L. W. King to be Sec. Lieut. (Ob. Offr.), and to be Hon. Lieut., from (A. and S.); July 15th.

The following P.O.O.'s (late R.N.A.S.) are granted temp. comms. as Sec. Lieuts. (Ob. Offrs.):—E. Meredith; May 6th. W. F. Jones, W. R. Hudson; May 25th. E. L. Comba; July 20th. I. D. McIntyre; July 27th.

The following are granted temp. comms. as Sec. Lieuts. (Ob. Offrs.):—T. V. Preedy (Temp. Sec. Lieut. Bord. R.); April 1st. A. G. MacGowan (Temp. Sec. Lieut., Gen. List, New Armies), K. O. Bracken (Sec. Lieut., R.F.A., S.R.); July 6th. P. Fish (Sec. Lieut., Notts and Derby R., T.F.), R. Lowe (Temp. Sec. Lieut., attd. Notts and Derby R.); July 12th. G. W. Parlee (Lieut., Can. A.M.C.) and to be Hon. Lieut.; July 14th. W. M. F. Bayliss (Lieut., Lancers) and to be Hon. Lieut., R. J. Mesney (Lieut., R. War. R., S.R.), and to be Hon. Lieut., J. Scott (Lieut., High. L.I.), and to be Hon. Lieut., S. Tweedie (Temp. Sec. Lieut., Labour Corps); July 15th. E. I. Riley (Lieut., Can. A.M.C.) and to be Hon. Lieut., J. H. Preston (Sec. Lieut. Sea. Highrs.), A. C. Hyde (Sec. Lieut. Essex R., T.F.), A. F. Pope (Temp. Sec. Lieut., attd. R. W. Kent R.), B. R. Garrod (Lieut. N. Lan. R.) and to be Hon. Lieut., C. A. Winch (Sec. Lieut., Rif. Brig., S.R.), E. C. Delamain, M.C. (Temp. Sec. Lieut. R.E.); July 16th. C. Partington (Temp. Lieut. R. War. R.) and to be Hon. Lieut., W. E. Baldwin (Sec. Lieut., Manch. R., T.F.), A. Petersen (Sec. Lieut., E. York R., S.R.); July 22nd. H. G. W. Parkinson (Lieut., A.S.C., T.F.), and to be Hon. Lieut.; July 23th. C. V. Kelway (Lieut., R.G.A., T.F.), and to be Hon. Lieut.; July 27th. A. C. Roberts (Temp. Sec. Lieut., attd. Midd'x R.), C. W. Clutton (Sec. Lieut. Glouce. R.), S. Lane (Sec. Lieut., Linc. R., T.F.), K. L. Turnbull (Sec. Lieut., Notts and Derby R., T.F.); Aug. 1st. F. Warham (Sec. Lieut. N. Staff. R., S.R.); Aug. 6th. E. E. Taylor (Temp. Sec. Lt., A. Cyclist Corps), H. M. Kettner (Temp. Sec. Lieut., attd. E. York R.); Aug. 12th.

The following Flt. Cds. are granted temp. comms. as Sec. Lieuts. (Ob.

Offrs.):—J. G. Hall; June 15th. C. H. Berry, D. Etchells, F. Gandy, H. R. Gomersall, J. R. Devlin, A. C. Fenn, J. Findley, W. E. Fisher, A. R. Cotton, D. H. W. Cropley, L. B. Simmons, D. J. Avery, R. M. Alston; Aug. 9th. S. Brooks-Perry, J. B. Jamieson; Aug. 12th. H. C. Richards, L. W. S. Smith, L. H. Day, G. N. Pask; Aug. 16th. O. Playne, E. C. Dearth, A. R. Bell, K. V. Hill, E. W. Renny, R. P. Cotton, C. E. Whyte, E. B. Webster, G. Thomson, H. Cahill, J. Bolton; Aug. 17th. D. E. Lowrie, J. E. Stalley, F. H. Langmaid, D. A. W. Weeks, N. C. Shergold, W. A. R. Speight; Aug. 18th. H. T. Barrett, G. H. Cavill, J. W. Elder, W. J. Hignett, H. C. Jepson, C. R. Jenkins, H. E. Linsley, J. MacLusky, J. I. Boothroyd, V. A. Shipman, V. J. Fontannaz, O. W. Clarke, G. A. Shipton, G. Scott, E. G. Stevens, A. L. Symes; Aug. 19th.

Sec. Lieut. (Hon. Lieut.) G. W. McA. Paterson to be Lieut.; May 21st.

Capt. W. B. Hogg (Paymaster, R.N.R.) relinquishes his commn. on ceasing to be employed; Aug. 19th.

Sec. Lieut. M. E. Dezee resigns his commn.; Aug. 21st.

Lieut. C. W. Bell relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Observer; Aug. 21st.

The following Sec. Lieuts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers:—J. D. Hardie, C. B. Hudson, J. M. Gibson; Aug. 21st.

The surname of Sec. Lieut. G. W. McA. Paterson is as now stated and not as in *Gazette* May 21st.

The surname of Sec. Lieut. C. G. Slaker is as now described, and not as stated in *Gazette* Aug. 9th.

The initials of Temp. Capt. G. L. Hobbs are as now described, and not as stated in *Gazette* July 23rd.

The notification in *Gazette* July 12th concerning Sec. Lieut. C. H. Ashworth is cancelled.

The notification in *Gazette* May 1st concerning Sec. Lieut. S. J. Dodson is cancelled.

The notifications in *Gazette* July 30th with reference to the following officers, A. and S. (late Gen. List), are cancelled:—Sec. Lieut. F. W. Long, Sec. Lieut. S. L. Bennett.

The notification in *Gazette* July 26th with reference to Sec. Lieut. H. H. Newman (A. and S.) is cancelled.

The notification in *Gazette* Aug. 6th with reference to Sec. Lieut. C. J. Dowson (K.B.) is cancelled.

The notification in *Gazette* June 4th with reference to Flt. Cdt. W. L. Woodhouse is cancelled.

## Administrative Branch.

Lieut. (Temp. Capt.) W. H. Holroyd to be Temp. Maj. while employed as Maj.; July 1st.

G. R. Hill (Capt., R.D.C.) is granted a temp. commission as Capt.; July 31st.

To be Temp. Cpts. while employed as Cpts.:—Sec. Lieut. L. J. Grant; April 1st (substituted for notification in *Gazette* Aug. 6th). Lieut. T. H. Nesbitt; April 1st. Sec. Lieut. F. Waldron; April 20th. Lieut. (Hon. Capt.) N. G. Hodson from (S.); July 8th. S. W. Hodgkinson is granted a temp. commission as Sec. Lieut., and to be Temp. Capt., while specially employed; Aug. 19th.

The following are granted temp. commissions as Sec. Lieuts., and to be Temp. Lieuts. while specially employed:—A. H. Dawson, T. Honnor; Aug. 16th.

The following are granted temp. commissions as Lieuts.:—J. F. Fielding (Lieut., Suff. R.); Aug. 3rd. R. Elphick (Temp. Lieut., Dub. Fus.); Aug. 6th.

Lieuts. (A.) to be Lieuts.:—S. F. Culver; June 27th. W. Woodward; Aug. 9th. R. I. Sweeney; Aug. 13th.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.:—R. E. Roberts; July 18th. (Hon. Lieut.) F. W. Day; July 24th. J. B. Martin, H. A. Thomas; Aug. 1st.

The following are granted temp. commission as Sec. Lieuts.:—E. G. Stott; May 7th. F. Dunlop; Aug. 15th. C. E. Barwell, P. C. Beardwood, E. J. Cook, C. W. Daniel, H. H. Fell, W. H. Heard, V. G. Jeffreys, W. E. Middleton, H. Owen, T. H. Rudd, H. L. Smith, V. A. F. Whitehead, R. A. Wright, W. Giddings, A. J. Knight, C. W. Richardson, G. Hutcheson (late Sub-Lieut., R.N.R.), and to be Hon. Lieut., F. J. Tussaud (Hon. Lieut., Ret. List), and to be Hon. Lieut.; Aug. 16th. H. E. Edwards, J. G. Collins, S. J. Laidler, L. K. Rayner, J. S. Shipway (Hon. Sec. Lieut., Ret. List, T.F.), C. A. Wilkin (Ex. F./Sub-Lieut., R.N.A.S.); Aug. 19th.

H. H. Newman (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut.; May 29th.

The notification in *Gazette*, April 26th, regarding Sec. Lieut. S. W. Turner is cancelled.

The notification in *Gazette*, Aug. 2nd, concerning Lieut. (Temp. Maj.) S. T. Grant is cancelled.

## Technical Branch.

The following are granted temp. commissions as Cpts.:—M. Deacon (Temp. Capt., R.E.); April 1st. L. Y. Stott (Lieut., R.N.V.R.); July 26th. Capt. FitzK. P. H. Somerset-Leeke, to be Capt. from (Ad.); April 1st.

To be Temp. Cpts. while employed as Cpts.:—Lieut. J. W. Tattersal; July 1st. Sec. Lieut. (Hon. Lieut.) A. E. Verpillieux; Aug. 19th. Lieut. (Hon. Capt.) V. F. Davies to be Lieut. from (A.), and to be Hon. Capt.; April 1st.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.:—(Hon. Lieut. L. Butterfield, J. G. Daniel, H. de S. Hodson, W. Marshall, J. Millar-Whitfield, F. C. Topham, E. C. Thompson; Aug. 1st. Lieut. G. P. Jones relinquishes his commission on ceasing to be employed; Aug. 7th.

## Medical Branch.

The following are granted temp. commissions as Cpts.:—H. J. Levisseur; (late Temp. Surgn., R.N.); Aug. 16th. C. L. Birmingham (late Temp. Lieut.) R.A.M.C.; Aug. 19th.

The following are granted temp. commissions as Lieuts.:—G. Meadows; June 1st. T. Montgomery, V. A. T. Spong; Aug. 19th.

## Memoranda.

Lieut.-Col. P. B. Joubert de la Ferte, D.S.O., to be Temp. Col. while specially employed; Aug. 21st.

The date of appointment of the following to be Temp. Brig.-Gen. is May 24th, and not as in *Gazettes* of July 5th and 26th:—Maj. (Temp. Brig.-Gen.) R. K. Bagnall-Wild, Maj. (Temp. Brig.-Gen.) J. G. Weir, C.M.G.

## London Gazette, August 23rd.

The following temporary appointment is made at the Air Ministry:—

**Staff Officer, 1st Class.**—Maj. (Temp. Lieut.-Col.) I. A. E. Edwards, and to retain his temp. rank while so employed, vice Maj. (Temp. Lieut.-Col.) T. W. C. Carthew, D.S.O.; June 25th.

**Staff Officer, 3rd Class.**—The initials of Capt. G. G. Braithwaite are as now described and not as in *Gazette* April 2nd.

The following temporary appointments are made:—

**Staff Officers, 2nd Class.**—And to be Temp. Maj. while so employed, if not already holding that rank:—Lieut. (Temp. Capt.) C. D. Morrison; July 1st. Capt. (Temp. Maj.) W. A. S. Rough; July 5th.



**Staff Officer, 3rd Class.**—Sec. Lieut. A. A. Longworth, and to be Temp. Capt. while so employed; June 7th. The name of Lieut. (Temp. Capt.) J. McG. Glen is as now described and not as in *Gazette* May 10th.

The date of appointment of Lieut. (Temp. Capt.) C. G. Turpin is July 3rd, and not as stated in *Gazette* August 2nd.

#### Flying Branch.

Capt. E. L. Johnston to be Temp. Maj. whilst employed as Maj. (Dir.); Aug. 2nd.

Lieut. (Temp. Capt.) A. Long retains his temp. rank whilst employed as Capt. (A.) from (T.); July 23rd.

Lieuts. to be Temp. Capt. whilst employed as Capt. (A.)—C. W. B. Martin; July 26th. R. C. Jenkins, M.C.; Aug. 3rd. (Hon. Capt.) J. L. Middleton; Aug. 9th. O. C. Holleran; Aug. 11th. C. J. Benter; Aug. 13th.

Lieuts. (Hon. Capt.) to be Temp. Capt. whilst employed as Capt. (S.)—J. M. Turner; July 18th. J. A. Sadler; Aug. 16th.

The following cadets are granted temp. commns. as Sec. Lieuts. (A.)—W. Anderson, K. W. Baker, N. Barrie, C. R. Baxter, C. E. Beckman, J. B. Bennett, H. Board, W. Bradley, J. D. Campbell, F. D. Chisholm, J. H. Cunningham, J. L. Dwyer, C. H. Edgcombe, G. J. Ellsmere, T. N. Enright, S. M. Farrell, A. M. Flanagan, O. R. Flynn, L. A. Fonseca, J. A. Gagnon, A. B. Gardiner, M. Gardiner, H. A. Gilber, S. J. Glavin, S. N. Hart, D. H. Hartness, W. H. Henrion, T. Herdman, C. L. Hicks, W. C. Howard, F. J. Howorth, E. King, C. E. Krouse, J. E. Le Court, P. McHenry, J. E. McLellan, C. R. McNeill, A. B. Mair, H. S. Moore, H. W. Orvis, F. A. Parker, C. W. Pethick, F. G. Reid, E. F. Reynolds, J. A. Ritchie, W. C. Ritchie, E. F. Rogers, W. E. Rose, N. W. Russell, N. Sagan, W. D. Saunders, P. G. Smith, P. S. Smith, J. G. Thomson, J. Williams, H. H. Williamson, D. R. Wood, A. M. Berry, J. A. Norris; July 25th.

The following Lieuts. (Ob. Officers) to be Lieuts. (A. and S.)—E. G. Hilton; July 4th. K. Wallace; July 9th. A. H. Thompson; July 10th. D. d'H. Humphreys; July 24th. Sec. Lieut. G. A. W. Garland to be Sec. Lieut. (A. and S.) from (T.); July 24th.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A. and S.)—H. C. Bryant; April 8th. F. H. Fisher, T. M. Phillips; May 17th. W. F. Carson; May 19th. E. F. Newman; June 3rd. R. F. Glazebrook; June 9th. H. C. Craddock, J. K. McGregor; June 15th. T. K. Spencer; June 16th. G. Lindsay, H. W. Spalding; June 17th. J. A. Critchley, G. J. Duncan; June 18th. O. V. Lee, J. I. Elliott; June 19th. A. A. Mound; June 20th. S. G. Hollingsworth; June 23rd. G. H. Clayton, A. Hill; June 24th. O. O. Mousley, J. D. Dunbar, J. W. Richards; June 25th. A. T. J. Anderson, N. Purcell, F. C. Brackenborough, S. D. Sayer; June 26th. L. A. Green, G. R. S. Browne; June 28th. G. F. Anderson, C. N. Boyd, H. J. D. Rudolf, C. A. Koch, J. B. O'Neil, B. Tamiriantz; June 29th. S. Graves; June 30th. H. C. W. Ross, L. E. Tatton; July 2nd. J. H. Gardner; July 5th. L. W. Greenwood; July 6th. W. A. Linnell; July 13th. A. H. Betteridge; July 20th. H. E. Dobson, A. J. Cleare, H. G. Fraser; July 23rd. W. Lloyd-Williams; July 25th. E. Hazell; July 26th. R. A. Whyte; July 28th.

Sec. Lieut. F. E. Spain (late R.F.C., S.R., on prob.) is confirmed in his rank as Temp. Sec. Lieut. (A. and S.); June 27th.

The following are granted temp. commns. as Sec. Lieuts. (A. and S.)—W. W. Halsall (Lieut., E. Kent R., T.F.), and to be Hon. Lieut.; April 27th. N. W. G. Wilkinson (Lieut., Manch. R., T.F.), and to be Hon. Lieut.; W. A. Moore (Lieut., Rif. Brig., S.R.), and to be Hon. Lieut.; May 30th. F. J. Kibbey-Green (late Lieut., S. African Inf.), and to be Hon. Lieut.; June 4th. J. C. S. Masters (Temp. Sec. Lieut., Brit. W.I.R.); B. B. Davis (Temp. Lieut., R.I. Rif.), and to be Hon. Lieut.; June 15th. T. L. T. Sykes (Lieut., R.I. Fus., S.R.), and to be Hon. Lieut.; June 16th. W. Coke-Gee (Sec. Lieut., I.A.R.O.); June 17th. P. A. Katte (Temp. Sec. Lieut., Worc. R.); June 18th. D. N. Read (Sec. Lieut., High L.I., S.R.); A. J. Smee (Lieut., Wilts R., S.R.), and to be Hon. Lieut.; O. B. Thompson (Temp. Lieut., Conn. Rang.), and to be Hon. Lieut.; June 20th. W. R. Barnett (Sec. Lieut., Shrops. L.I.); June 22nd. A. T. Holman (Temp. Lieut., R.F.A.), and to be Hon. Lieut.; June 23rd. H. Thickett (Lieut., R. Lanc. R., S.R.), and to be Hon. Lieut.; June 25th. L. J. Newman (Lieut., B.S.A.P.), and to be Hon. Lieut.; C. D. Spiers (Temp. Sec. Lieut., attd. Glouc. R.); June 26th. N. MacLeod, M.C., D.C.M. (Lieut., Sea Highrs.), and to be Hon. Lieut.; M. R. Stack (Temp. Lieut., Conn. Rang.), and to be Hon. Lieut.; P. V. C. Low (Lieut., R. Highrs.), and to be Hon. Lieut.; A. M. Pawsey (Lieut., N. Lan. R., T.F.), and to be Hon. Lieut.; June 27th. S. Wallingford (Temp. Sec. Lieut., Rif. Brig.); J. D. McEwen (Lieut., R.F.A., S.R.), and to be Hon. Lieut.; J. S. Bower-Binns (Lieut., E. Ont. R., C.E.F.), and to be Hon. Lieut.; H. A. Heritage (Sec. Lieut., Lond. R., T.F.); June 28th. C. H. Connah (Temp. Sec. Lieut., Notts and Derby R.); A. F. B. Broadhurst (Capt., High L.I., S.R.), and to be Hon. Capt.; L. Darvall, M.C. (Lieut., York R.), and to be Hon. Lieut.; A. Seale (Lieut., Ches. R., T.F.), and to be Hon. Lieut.; June 20th. W. W. Mackinlay (Sec. Lieut., R.G.A., S.R.); A. E. Tweed (Lieut., Devon R., S.R.), and to be Hon. Lieut.; P. H. Turner, M.C. (Lieut., Essex R., T.F.), and to be Hon. Lieut.; A. C. Orchin (Temp. Lieut., Res. R. of Cav., attd. Hrs.), and to be Hon. Lieut.; T. T. Morton (Lieut., Yorks. Hrs., T.F.), posted to W. Yorks R.), and to be Hon. Lieut.; L. B. Felton (Temp. Lieut., New Armies, Gen. List), and to be Hon. Lieut.; J. F. Forster (Lieut., Bord. R., T.F.), and to be Hon. Lieut.; June 30th. C. C. Reynolds, M.M. (Sec. Lieut., Wilts R., S.R.); V. C. Hemsley (Temp. Sec. Lieut., attd. Dorset R.); July 2nd. R. W. Jones (Temp. Sec. Lieut., attd. R. W. Fus.); July 4th. B. Mansfield (Sec. Lieut., Sco. Rif., S.R.); D. L. Blackford (Capt., New Armies, Gen. List), and to be Hon. Capt.; July 5th. F. W. Van Blommestein (Sec. Lieut., Lond. R., T.F.); July 9th. J. Houghton (Lieut., R. War. R., T.F.), and to be Hon. Lieut.; July 10th. A. E. Turton (Temp. Sec. Lieut., Midd'x R.); July 13th. H. J. Bath (Sec. Lieut., York R., T.F.); July 14th. S. R. Ellis (Temp. Sec. Lieut., attd. Midd'x R.); J. A. Lewis (Temp. Sec. Lieut., attd. Midd'x R.); A. J. Howell (Sec. Lieut., Glamorgan Yeo., T.F.); July 15th. D. Leed (Temp. Sec. Lieut., Hamps R.); July 16th. W. W. E. Clarke (Temp. Sec. Lieut., attd. Lan. Fus.); July 17th. H. E. Y. Carroll (Sec. Lieut., K.R.I. Hrs.); A. Murchie (Sec. Lieut., Arg. and Suth'd. Highrs., T.F.); July 21st. J. S. Paton (Capt., Arg. and Suth'd. Highrs., T.F.), and to be Hon. Capt.; W. H. Coghill (Sec. Lieut., Sea Highrs., T.F.); July 24th. L. S. Davis (Sec. Lieut., R.F.A., S.R.); July 25th. D. J. Georgeson (Sec. Lieut., Gord. Highrs., T.F.); July 26th. J. P. Findlay (late Sec. Lieut., Aus. Commonwealth Forces; Aug. 21st).

The following Flt. Cds. are granted temp. commns. as Sec. Lieuts. (A. and S.)—A. C. B. Ferguson; May 31st. S. Barker; June 7th. R. Hughes; June 10th. G. Stott; July 5th. W. A. Greene; July 14th. A. Tapping; July 19th. R. A. Gibbs; July 20th. R. T. Owen, C. W. S. Chalmers; July 22nd. S. H. Wright; July 24th. G. A. Nicholls, D. R. Trotter; July 25th. A. Dukes, W. H. August; July 26th. J. Derbyshire; Aug. 7th. H. G. Pike, J. B. Vickers; Aug. 8th. F. E. Vernon, A. J. Cobham; Aug. 9th. B. Stewart, G. Iliff, C. L. Tench; Aug. 10th.

Cdts. granted temp. commns. as Sec. Lieuts. (A. and S.)—B. G. W. Adams, W. E. Brotherton, M. R. Brown, F. L. Catterall, C. C. A. Clark, J. Clarke, D. Collison, J. M. S. Conning, C. A. Court, H. C. Edmeades, L. Futerman, E. A. Gray, E. Hulley, T. O. James, R. J. M. Jeffrey, C. K. Joubert, C. D. Kinnmont, S. Max, A. B. McDonald, A. H. Miller, A. Morrison, R. Morton, J. M. Neall, E. G. Noble, B. Pemberton, D. W. E. G. Phillips, N. C. R. Roberts, H. R. Roberts, L. Rolland, D. R. Schonegevel, T. C. Stranger, W. B. Smith, P. J. Theron, A. R. T. Thompson, C. C. R. Thompson, T. C. Thomson, S. O. Truby, C. W. Waller, G. H. W. Wilson; Aug. 13th. Prob. Flight Offrs. (late R.N.A.S.) granted temp. commns. as Sec. Lieuts. (A. and S.)—A. W. Steward, C. W.

Teleaven, R. W. Heine, J. V. Blandford; June 28th. G. B. M. McMurdo; July 10th. C. P. Miller, E. F. Phillips, W. A. Soutar, A. D. Macpherson, K. P. Phillips, R. St. C. McLaughlin, M. D. McTaggart; July 12th. R. C. Hockey, H. C. Maisey, J. B. Risk, P. B. Thorpe, C. C. Fisher, R. A. Gunther; July 17th. R. F. Whitaker, R. G. Mollard, T. N. Leithead, F. M. Ramsey, F. I. Atkins, S. Dixon, W. G. Wheatland, R. N. Barber; July 19th. B. Hinkler, E. Munro; July 20th. V. B. Pare, M. G. Cruise, H. C. Mason, L. B. Irish, R. N. Tedbury; July 21st. F. Chalcraft, C. R. Peters; July 24th. W. E. Thomas, J. G. Dugdale, O. L. Malcolm; July 27th. Lieut. S. Leslie to be Lieut. (Obs., Offr.) from (A. and S.); July 28th. Sec. Lieuts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lieuts. (Obs. Offrs.)—T. E. Gohl; June 1st. J. F. Glemre; June 20th. L. Harrison; June 28th. H. L. Wilson; June 30th. A. J. Bishop; July 20th. A. E. Tompkins; July 21st. R. Digby-Worsley; July 24th. H. Watkins, K. K. White, H. R. Sturgess, H. O. Cuffie; July 25th. L. A. Hooper, B. J. O'Meara; July 28th. A. E. Walsh, R. J. Smither, C. K. G. Brown; July 30th. R. Livingston; July 31st. J. C. Walker; Aug. 1st. W. T. J. Hall, J. G. Reynard, R. M. Doyle; Aug. 2nd. H. S. Dudson; Aug. 3rd. E. A. Sewell; Aug. 10th. E. P. Hulme; Aug. 22nd. The following are granted temp. commns. as Sec. Lieuts. (Ob. Officers)—P. M. Ashton (Temp. Lieut., York and Lanc. R.), and to be Hon. Lieut.; April 1st. R. Addison, M.C. (Temp. Sec. Lieut., attd. E. Lan. R.); June 12th. P. A. Lund (Lieut., R. W. Fus., S.R.), and to be Hon. Lieut.; June 13th. H. E. Power (Sec. Lieut., E. Surr. R.); June 29th. T. H. Formby (Sec. Lieut., R.G.A., S.R.); June 30th. I. B. MacBean (Lieut., King Edward's Horse, S.R.), and to be Hon. Lieut.; July 1st. J. A. Lewis (Temp. Sec. Lieut., attd. S. Wales Bord.); July 24th. A. G. Lambert (Sec. Lieut., Lond. R.); July 26th. R. O. Pritchard (Temp. Sec. Lieut., Welsh R.); H. G. Sands (Sec. Lieut., Norf. R., T.F.), P. Lawrence (Temp. Sec. Lieut., Linc. R.), J. H. Roberts (Lieut., R.F.A., S.R.), and to be Hon. Lieut.; July 31st. B. S. Chantrill (Temp. Sec. Lieut., Glouc. R.), A. Ostler, M.C. (Lieut., R.F.A.), and to be Hon. Lieut., N. B. Eames (Sec. Lieut., Manch. R., S.R.); Aug. 1st. K. N. King (Temp. Sec. Lieut., E. Surr. R.); Aug. 2nd. H. A. H. Mould (Temp. Lieut., North'd. Fus.), and to be Hon. Lieut., J. A. Parkinson (Lieut., R. Lanc. R., T.F.), and to be Hon. Lieut.; Aug. 3rd. T. J. Southern (Lieut., W. Yorks R.), and to be Hon. Lieut.; Aug. 7th. E. T. Roodcroft (Temp. Sec. Lieut., attd. Manch. R.); Aug. 10th. C. G. Strange (Sec. Lieut., Dorset R., T.F.); Aug. 17th. I. Blackburn (Sec. Lieut., Lancs. Fus., T.F.); Aug. 19th. The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Ob. Officers)—J. A. Elvin; May 18th. H. Walker; July 27th. W. L. N. Grant, F. E. Green, T. W. Hancock, O. R. Hibbert, H. Hitchon, K. H. Holley, J. C. Humphreys, B. Hutchinson, T. A. Jones, L. W. Lauchbury, G. V. Harper, R. W. Lewin, E. B. Smalles; Aug. 14th. W. R. J. Cannon, H. Connell, H. Dobing, K. W. I. Howie, E. M. Patterson, W. A. Ruxton, J. N. Schofield, G. Stannard, H. W. Wynn, H. L. Wortley, H. J. Wood; Aug. 17th. R. D. Vaughan, G. B. Powell, W. G. Perry, J. R. Rankin, H. Alexander, H. Bridger, H. Bell, F. J. Farr, G. B. Fairhurst, W. C. Galbraith, L. A. Drain, L. J. Whitehead, N. P. Hilton, T. N. Drake, R. I. Cox, H. G. E. Davis; Aug. 22nd. The following relinquish their commns. on ceasing to be empd.—Lieut. R. P. Ziegler (Lieut., E. Ont. R.); July 2nd. Lieut. R. Skelton (Lieut., Dur. L.I., T.F.); July 18th. Lieut. C. F. Kelsch relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Observer; Aug. 24th. The following Sec. Lieuts., relinquish their commns., having been found permanently unfit for further instruction as Pilots or Observers—T. E. David, D. M. Galloway, G. H. Brown, H. V. Henderson, W. L. Dawson, R. E. York, R. D. Muir, T. J. Lamb, W. Barr, S. W. Crane; Aug. 24th. The surname of Sec. Lieut. (Hon. Lieut.) R. L. Tilly is as now described, and not as stated on page 6228 of the *Gazette* May 28th. The notification concerning G. W. McA. Paterson (R. Scots, T.F.), Sec. Lieut. (K.B.) in the *Gazette* of Aug. 6th, is cancelled. The notification on page 8205 of the *Gazette* July 12th concerning Sec. Lieut. F. J. L. Bishop is cancelled.

#### Administrative Branch.

R. Inglis, D.S.O. (Temp. Maj., K.R.R.C.) is granted a temp. commn. as Maj.; July 17th. The following Lieuts. to be Temp. Capt. while employed as Capt. :—C. S. Fulton; June 10th. L. B. Nicholls, from (O.); June 24th. (Hon. Capt.) D. A. G. Dallas; June 28th. Sec. Lieut. (Hon. Lieut.) S. Waring to be Temp. Capt. while employed as Capt.; Aug. 1st. Lieut. M. Lewis to be Lieut., from (O.); April 12th. W. F. Morris (Lieut., Lond. R.) is granted a temp. commn. as Lieut.; July 1st. The following Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.—G. H. Blake, D.C.M.; May 1st. (Hon. Lieut.) C. Kenyon; May 8th. (Hon. Capt.) H. A. de F. Furber, and to be Hon. Capt. S. Tew; Aug. 1st. Sec. Lieut. T. L. Price (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut.; July 16th. The following are granted temp. commns. as Sec. Lieuts.—E. Chesterfield, E. J. Spearing; July 1st. R. E. Barrett, C. E. Winter; Aug. 19th. C. A. Luce (late Asst. Paymaster, R.N.V.R.); Aug. 21st. The notification in the *Gazette* of July 9th concerning P. S. Howard is cancelled.

#### Technical Branch.

Capt. (Temp. Maj.) E. Graham retains his temp. rank whilst employed as Maj., from (Ad.); July 17th. H. R. Northover, M.C. (Maj., Can. Ord. C.), is granted a temp. commn. as Maj.; Aug. 1st. G. C. Milnes, M.C. (Capt., R. Lanc. R.), is granted a temp. commn. as Capt.; April 1st (substituted for notification in the *Gazette* Aug. 13th). Lieut. R. L. Brown to be Lieut., from (A. and S.); June 17th. Sec. Lieut. S. L. Smith to be Temp. Lieut. whilst employed as Lieut.; Aug. 5th. Sec. Lieut. H. A. Blaquiere (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut.; May 1st. Lieut. J. A. Rutherford to be Sec. Lieut., and to be Hon. Lieut. from (A. and S.); July 1st. The notification in the *Gazette* of June 4th, page 6,593, regarding Sec. Lieut. (Hon. Lieut.) F. S. S. Calthorpe is cancelled; the notification on page 9,273 of the *Gazette* Aug. 6th, concerning Sec. Lieut. R. T. Belville is cancelled.

#### Medical Branch.

H. V. Wells (Fleet Surgeon, R.N.) is granted a temp. commn. as Lieut.-Col.; Aug. 14th. P. L. Moore (late Capt., R.A.M.C.) is granted a temp. commn. as Capt.; June 1st.

#### Dental Branch.

V. E. Mills is granted a temp. commn. as Lieut.; Aug. 19th. Memoranda.—Maj.-Gen. Sir G. M. Paine, K.C.B., M.V.O., is granted a permanent commn. as Maj.-Gen.; Aug. 23rd. Sec. Lieut. A. G. F. Nash to be Temp. Capt. whilst holding a special appointment in the Ministry of Munitions; Aug. 23rd.

#### Royal Flying Corps (Military Wing).

*London Gazette Supplement, August 14th.*

**General List.**—The following gunners, from R.F.A., Motor Machine Gun Batt., to be Temp. Sec. Lieuts.—J. O'Brien-Saint; Feb. 18th. C. H. G. Nida; Feb. 20th. T. A. Crowe; March 24th.

Motor Cyclist Cpl. H. H. Howells, from R.E. (T.F.), to be Temp. Sec. Lieut.; March 8th.

Pte. S. W. Turner, from Dorset R. (T.F.), to be Temp. Sec. Lieut. (on prob.); Jan. 2nd.

*London Gazette Supplement, August 15th.*

**Flight Commander.**—Temp. Lieut. R. S. S. Brown, M.C., Gen. List, and to be Temp. Capt. while so employed; Dec. 30th, 1917.

**General List.**—Private O. C. Roberts, from Midd'x R. (T.F.), to be Temp. Sec. Lieut.; Feb. 19th.

*London Gazette Supplement, August 16th.*

**Equipment Officer, 3rd Class.**—J. W. Harling, from Temp. Qrmr. and Hon. Lieut., and to be Temp. Lieut.; Dec. 2nd, 1917.



# AIRCRAFT WORK AT THE FRONT.

## OFFICIAL INFORMATION.

### British.

*Headquarters, R.A.F. Independent Force, August 18th.*

"On the night of the 17th-18th inst. our squadrons attacked numerous aerodromes, railway junctions, blast furnaces, trains, and other ground targets. Machine-gun fire was freely used against many of the objectives. One of our machines has not returned."

*General Headquarters, August 18th.*

"Apart from the very successful raid already reported on Lomme aerodrome, there was no feature of special interest in our air work on August 17th. Enemy aircraft were inactive. We destroyed five German machines and a balloon. Three of our machines are missing. Thirteen tons of bombs were dropped by us during the day. Low clouds, rain, and high wind prevented any aerial operations being carried out at night."

*War Office, August 18th.*

"*Italian Front.*—Since the 9th inst. the Royal Air Force have destroyed eight hostile aeroplanes and two observation balloons. One of our machines is missing."

"*Salonica.*—Since August 5th we have destroyed four hostile aeroplanes and driven one down out of control."

*General Headquarters, August 19th.*

"Low clouds and high wind restricted work in the air on August 18th. Enemy aircraft were not active. We brought down six hostile machines and shot down a German balloon in flames. One of our aeroplanes is missing. Sixteen tons of bombs were dropped by us during the day and the following night on different targets."

*Headquarters, R.A.F. Independent Force, August 19th.*

"On the night of August 18th-19th our squadrons attacked hostile aerodrome and landing grounds. Various ground targets were also attacked with machine gun fire. One of our machines has failed to return."

*Headquarters, R.A.F. Independent Force, August 20th.*

"On the night of the 19th-20th our squadrons again attacked hostile aerodromes and railways. Hangars, trains and various ground targets were bombed and subjected to machine-gun fire. All our machines returned safely."

*General Headquarters, August 20th.*

"Early in the morning of August 19th some of our squadrons combined in a very successful attack on Phalempin aerodrome, south of Lille. Many bombs were dropped from a low height and machine-guns were used with good effect on ground targets. Several aeroplane sheds were hit and big fires started. Some enemy machines which attempted to interfere with our aeroplanes from the air were prevented from attacking by our escorting squadrons. All the machines engaged on this raid returned safely. Bruges Docks, the railway at Roisel, and a number of enemy dumps were also heavily bombed by us. The total weight of bombs dropped during the day amounted to 15½ tons. A good deal of reconnaissance, photographic, and observation work was also carried out by our airmen. In air fighting 13 enemy machines were destroyed and six driven down out of control. In addition, one hostile aeroplane was shot down and another brought down out of control by fire from the ground. Four German balloons in the Merville sector were set on fire by one of our airmen. Seven of our machines are missing. Unfavourable weather prevented any flying at night."

*Admiralty, August 21st.*

"During the period August 15th to 18th inclusive, R.A.F. contingents, working with the Navy, have bombed the following military objectives:—Solway Works, Zeebrugge, Bruges Docks, Anti-aircraft batteries, Westende, Ostend Docks, Zeebrugge, Aerttrycke, Middelkerke, Ploaeschendaele Canal, Stalhille Dump, Meetkerke, Lefinghe, Zeebrugge-Bruges Canal, enemy shipping. Between 15 and 16 tons of explosives were dropped and good results obtained. Reconnaissance, photographic, and anti-submarine patrols have been maintained. During the course of these operations, nine enemy machines have been destroyed and eight driven down out of control. We have lost four machines, one of which landed in Holland, and three officers have been wounded. In home waters, during the same period, anti-submarine, convoy, and hostile aircraft patrols have been maintained by seaplanes, aeroplanes, and airships. Submarines have been sighted and attacked and mines located and destroyed. One machine has failed to return from patrol."

*General Headquarters, August 21st.*

"On August 20th enemy activity in the air was very slight. We brought down one hostile aeroplane, and one of our own machines is missing. Low clouds prevented all flying at night."

*Headquarters, R.A.F. Independent Force, August 22nd.*

"In spite of the enemy's most determined efforts for protection, consisting of a large number of fighting machines and a greatly increased number of anti-aircraft guns, between the hours of 8 p.m. on the 21st and 10 a.m. on the 22nd inst. five important towns in Germany were heavily attacked as well as five hostile aerodromes. On the night of the 21st-22nd inst. weather conditions were exceptionally good, and a large amount of work was carried out by our squadrons. Military objectives at Frankfurt and Cologne were heavily attacked. Very good results were observed and bombs were sent all around the stations and barracks. The railway junction at Trèves was also successfully attacked. All our machines returned safely. Four hostile aerodromes were heavily bombed and many hangars hit. Machine-guns were freely used on hangars, trains, searchlights, and anti-aircraft guns. One of our machines is missing. On the morning of the 22nd inst. one of our squadrons attacked the chemical factories at Mannheim. During heavy fighting on the outward journey two of our machines were brought down. The remainder reached and successfully bombed the objective. Very fierce fighting again took place on the return journey, as a result of which five more of our machines are missing. Three hostile machines were destroyed; two of these were seen to crash, and one went down in flames. Two other squadrons attacked the railway sidings at Coblenz at about 7.30 a.m., and a hostile aerodrome at Hagenau, with very good results. All of these machines returned safely. One hundred and ninety-four bombs were dropped by night and 21 tons of bombs by day."

*General Headquarters, August 22nd.*

"The thick mist which prevailed during the early morning of August 21st prevented our aeroplanes from taking part in the battle at the opening of the attack north of the Ancre. As the morning advanced the sky grew clearer, and for the rest of the day our airmen were actively engaged. Some machines devoted themselves to the work of contact patrol and reported the positions of our advancing troops to their Headquarters from time to time. Other machines attacked hostile troops and transport from low altitudes with bombs and machine-gun fire, scattering ammunition wagons and columns on the march. In several cases German guns firing at our tanks were silenced by bombs and machine-gun fire from the air. A great deal of work was done also in reporting active hostile batteries to our artillery as well as in reconnaissances and observations of our artillery fire. Twelve tons of bombs were dropped by us during the day. In air fighting 21 hostile machines were destroyed and eight others driven down out of control. One German balloon was shot down in flames. Eight of our machines are missing. On the night of August 21st-22nd there was bright moonlight and a clear sky. Our night bombing aeroplanes dropped more than 25½ tons of bombs on different targets. Cambrai and Maroing station were heavily attacked, as well as a number of railway bridges and lines, aerodromes,

and billets. The bridge at Aubigny-au-Bac on the road connecting Douai and Cambrai was broken down. All our machines returned safely. One of our night-flying machines brought down in flames on this side of the line a large enemy night-bombing aeroplane. The machine reported in yesterday's *communiqué* as missing has now returned."

*General Headquarters, August 23rd.*

"Our airmen had a busy and successful day on August 22nd. Clear weather enabled photographic and reconnaissance work to be carried out, and a large number of hostile batteries and other targets were engaged by our artillery with aeroplanes and balloon observation. The position of our advancing infantry was ascertained and reported by our machines, while the enemy was constantly harassed from the air. During the day 35 tons of bombs were dropped by us. Gondrecourt Aerodrome was attacked in the early morning from a low height with good effect, and many of the enemy's dumps, stations, and bridges were heavily assailed, as well as Bruges Docks. Combats in the air were numerous, and 20 German aeroplanes and eight balloons were destroyed. Four hostile machines were driven down out of control. Three of our machines are missing. There was further heavy bombing at night, a total of 19 tons of bombs being discharged upon selected targets, of which the railway junctions at Valenciennes, Somain, Douai, and Cambrai were the chief. All our night-flying aeroplanes returned safely, and one of them brought down a large enemy night-bombing machine on our side of the line."

*Headquarters, R.A.F. Independent Force, August 24th.*

"On the night of the 22nd-23rd inst. our squadrons made a concentrated attack on the hostile aerodromes at Foldersweiler [?], on which eight tons of bombs were dropped. Several large sheds and hangars were set on fire. One of our machines attacked the chemical factories at Saaralbe, where excellent results were obtained. Fires and explosions were seen for 1½ miles after the attack. Various railway targets were also bombed with good effect. Three of our machines are missing. On the morning of the 23rd inst. our machines successfully attacked the hostile aerodrome at Buhl. The railway junction at Trèves was also attacked, and several bursts were observed in the station and on the railway. All our machines returned safely. The machine previously reported as missing on the night of the 18th-19th inst. has now been located undamaged. On the night of the 23rd-24th inst., in spite of thunderstorms, our squadrons carried out operations against a hostile aerodrome and the railway junction at Ehrange. A fire was caused, and considerable damage done at the latter place. All our machines returned safely."

*General Headquarters, August 24th.*

"On August 23rd our machines co-operated closely throughout the day with our troops in the battle area, keeping touch with their advance and reporting enemy movements. Observation for artillery fire by balloons and aeroplanes was carried on as usual. Our low-flying squadrons constantly attacked with machine-gun fire and bombed the German infantry wagons and guns, throwing them into confusion. Our squadrons, co-operating with Tanks, silenced enemy batteries which were impeding the advance. A bombing raid on the German aerodrome at Cantin, south of Douai, was carried out by some of our scouts and escorting machines. Several of the hangars were set on fire by direct hits, and machine-gun fire was opened from a very low height on troops and transport near by. An enemy machine which attacked our raiders was shot down. All our machines engaged in the raid returned safely. A total of 26 tons of bombs was dropped by our airmen during the day. Twelve enemy machines were destroyed by us in air fighting, and two more were brought down by fire from the ground. Three other hostile machines were driven down out of control. Four German balloons were shot down in flames. Four of our machines are missing. At night, though the weather was cloudy, nearly five tons of bombs were dropped by us without loss. During the last fortnight 328 German aeroplanes have been brought down by our airmen on the Western front and 134 driven down out of control. The enemy balloons shot down in the same period amount to 31. The total weight of bombs dropped by us during this period is 594 tons."

### French.

*Paris, August 18th.*

"Lieut. Fouck brought down three enemy aeroplanes on August 14th, which brings to 60 the number of machines brought down by this pilot up to date. Yesterday eight enemy aeroplanes were brought down or driven down out of control and three captive balloons were set on fire. Our bombing squadrons during the night of August 17th-18th dropped seven tons of projectiles on the stations of Bazancourt and Amagne. It is confirmed that on the 8th inst. Sub-Lieut. Boyau brought down his 30th flying machine."

"British pilots brought down an enemy aeroplane north of Ghevigli."

*Paris, August 19th.*

"Yesterday three German aeroplanes were brought down and one captive balloon was set on fire."

"During the night of August 18th-19th our bombing squadrons dropped 8 tons of projectiles on the bivouacs in the region of Berry-au-Bac and Guignicourt and the stations of Mézières and Châtelet-sur-Rétourne."

"*Balkans.*—British airmen bombarded enemy camps in the Vardar region and brought down two enemy machines."

*Paris, August 20th.*

"German aeroplanes bombarded Nancy last night. Six persons are reported killed and 20 injured among the civilian population."

"*Salonica.*—British aircraft bombed trains and convoys in the region of Seres."

*Paris, August 21st.*

"Yesterday, notwithstanding the unfavourable weather and low clouds, our pilots were very active. Nine enemy aeroplanes were put out of action and three captive balloons were set on fire. Forty-one tons of projectiles were dropped in the daytime from a height varying between 150 and 1,500 feet on concentrations of troops and convoys. During the night of August 20th-21st we continued to attack with bomb and machine gun the bivouacs and passages of the valley of the Ailette. In addition, 23 tons of projectiles were dropped on the stations of Mézières, Amagne, Lucquoy, Châtelet-sur-Rétourne, Conflans, and Amanvilliers. The station of Thionville received four tons of explosives. Altogether 64 tons of projectiles were employed, with excellent results."

"*Salonica.*—On the whole front there was artillery and reconnoitring activity. A Serbian detachment carried out a successful raid into the Bulgarian lines. A French airman shot down an enemy aeroplane south of Prilep."

*Paris, August 22nd.*

"On August 21st our airmen brought down or put out of action 17 enemy aeroplanes, set six captive balloons on fire, and repeatedly caught retreating German troops under machine-gun fire in the region of Lassigny and between the Oise and the Aisne. Our bombing machines dropped by day 34 tons of projectiles in the regions of Chauny, Margival, Vauxaillon, and Anizy-le-Château, and by night 28 tons were dropped on the railway stations of Thionville, Conflans, and Mézières, as well as in the battle zone. Numerous hits on objectives and fires were observed on the railway station of Conflans, Ham, Guiscard, Chauny, Thionville, Thiaucourt, and Pontavert. During the days of August 19th, 20th, and 21st our observation machines did a considerable amount of work during the battle, in spite of atmospheric conditions which were often unfavourable, and notwithstanding the attacks of enemy airmen, who endeavoured especially to prevent our infantry aeroplanes from carrying out their reconnaissances and



from marking the lines. During the night of the 21st the Germans bombarded Dunkirk with heavy shells. Seven civilians were killed and one was wounded."

*Paris, August 23rd.*

"Favourable weather yesterday enabled our pilots to carry out important work. Our observers, with their customary audacity, made numerous reconnaissances far into the enemy lines. In particular the photographic missions brought back more than a thousand exposures from their expeditions. Our chasing planes felled or put out of action 14 enemy aeroplanes and set fire to nine captive balloons. The day bombing squadrons dropped 18 tons of projectiles and fired thousands of cartridges on concentrations of troops and convoys in the Margival ravine, on the roads from Soissons to Chauny, and on Vauxaillon, Anizy Le Château, and Laffaux. During the night our activity was not relaxed. Twenty-five tons of projectiles were dropped on the stations of Ham, Laon and Anizy Le Château, causing fires, particularly at Chauny and at Guiscard, and blowing up a munitions dépôt at Sommettes Eaucourt. The stations of Mézères, Maison Bleue, Machault, and Pontabert were also bombed with excellent results. Finally, a raid in great force was carried out against the very important aerodrome of Mars La Tour. As soon as the first bombs fell a great fire broke out in the aeroplane sheds and the huts of the staff. Aided by the light of the flames, the other aeroplanes were able most effectively to bomb the other hangars and huts, and also the personnel. Numerous machines were seen to be burning on the ground. Altogether, 43 tons were employed in the day-time yesterday and last night. Lieut. de Romanet brought down on August 22nd his 10th aeroplane."

"Balkans.—Notwithstanding the bad weather, British aeroplanes bombarded enemy depôts in the Struma Valley."

*Paris, August 24th.*

"Yesterday nine German aeroplanes were brought down or put out of action. A captive balloon was set on fire. Our bombing planes dropped 12,300 kilogrammes of projectiles, and fired several thousand cartridges on the region of Anizy-le-Château, Brancourt, Landricourt, and the Mortier Forest, where our observation planes had reported the concentration of important enemy reserves and convoys."

#### U.S.A.

*Paris, August 21st.*

"Yesterday our airmen successfully bombed the railway at Flabeuville. All our machines returned."

*Paris, August 23rd.*

"North-West of Toul one of our airmen shot down a hostile machine. On August 21st and 22nd our airmen successfully bombed the railroad yards at Longayon, Audon-le-Roman and Conflans. Three and a half tons of bombs were dropped, and many direct hits were observed. All our machines returned."

#### Belgian.

*Havre, August 17th.*

"Sub-Lieut. Coppens brought down in flames on the same day three enemy balloons, bringing to 25 the number of his victories."

*Havre, August 22nd.*

"A German balloon was set on fire by one of our airmen."

#### Italian.

*Rome, August 18th.*

"The activity of our own and Allied airmen was during the day considerable. An enemy machine was brought down."

*Rome, August 20th.*

"During the day yesterday our bombardment machines effectively bombarded with nearly 2,000 kilogrammes of bombs enemy aviation camps. On August 18th numerous naval chasing squadrons bombed military objectives at Parenzo and dropped 3,000 kilogrammes of explosives. One hangar is known to have been destroyed, and several fires were also observed in the neighbourhood of military works. On the night of August 15th-16th naval planes took part

in aerial bombing actions across the Lower Piave on the enemy's back areas. Others bombed with visibly successful results the arsenal at Pola and a torpedo-boat anchorage. On the morning of the 16th British aeroplanes bombarded the aerial station at Durazzo, causing fires, and shortly afterwards naval planes bombed steamers at anchor in the harbour. Other naval planes bombed the works and harbour of San Giovanni di Medua and dropped in addition half a ton of explosives. Durazzo was again bombarded in the night with useful results. On the 17th a naval squadron dropped manifestoes on Zara and the neighbouring islands. We suffered no losses in all these operations."

*Rome, August 21st.*

"Aerial activity was greatly hindered by atmospheric conditions. Four hostile machines were brought down."

*Rome, August 22nd.*

"Italian airmen successfully bombarded objectives in Sugana Valley and dropped 2,000 kilos (two tons) of bombs on an aviation camp to the west of Meduna torrent, causing conflagrations. Five hostile machines were brought down by our own and Allied airmen."

*Rome, August 23rd.*

"Last night our aerial activity was intense; 7,000 kgs. of bombs were dropped on enemy aviation camps, and railway establishments were bombarded successfully. Hostile aircraft dropped bombs on Treviso, wounding a child and causing slight damage to buildings. An enemy machine which was hit fell in the sea to the south of Venice and was captured. During the day eight hostile planes were brought down in air fighting."

*Rome, August 24th.*

"Last night our aeroplanes effectively bombed enemy aviation camps in Lagarina Valley and in the Friuli plains. Five hostile aeroplanes were brought down in air fighting."

"A small number of enemy machines—probably three—during the night of August 21st dropped 30 bombs on Venice. One person was killed and seven injured. No damage was caused to the military works. During the same night one person was killed and four injured in a raid on Cortellazzo, where some bombs were dropped."

"Another raid on Venice by five enemy aeroplanes on August 23rd was ineffective, a number of bombs which were dropped causing no damage. One person was slightly injured."

"During the night of August 22nd a raid was made on Porto Corsini, and some damage was caused to the military works. Six persons were injured. Another raid on Fiumi-Uniti (near Ravenna) caused no damage. The efficacious fire of our anti-aircraft batteries forced the enemy machines to keep at a very great altitude, thus preventing the bombs which were dropped striking the objects aimed at. An enemy seaplane was obliged to descend to the sea in the neighbourhood of the Lido. The crew of three men were taken prisoners."

#### German.

*Berlin, August 20th.*

"Lieut. Veltjens obtained his 20th, 30th, and 31st aerial victories; Sergt. May his 21st, 22nd, and 23rd; and Lieut. Roeth his 22nd."

*Berlin, August 23rd.*

"Lieut. Udet obtained his 57th and 58th aerial victories. During air raids on the homeland, according to reports received up to the present, seven machines out of the enemy squadron of 10 aeroplanes which attacked Karlsruhe were destroyed by our chasing planes."

*Berlin, August 24th.*

"Lieut. Udet achieved his 59th and 60th aerial victories. During the past few days Lieut. Laumen has achieved his 25th and 26th aerial victories. Sergeant-Major Doerr won his 22nd and 23rd, and First Lieut. Auffahrt his 22nd. First Lieut. Greim and First Lieut. Buechner won their 20th aerial victories."

## LEISURE HOURS.

THANKS to the perfect boating weather and the excellent organisation of Mr. Fred Norman, the Regatta and Water Carnival at Shepperton on Saturday last was a splendid success, and the R.A.F. Hospital Fund should reap considerable benefit. In the brief space at our disposal it is unfortunately impossible to do justice to the proceedings, for the programme was a long and varied one. Swimming, diving, rowing, canoeing and punting events followed one another in rapid succession, while overhead airships and aeroplanes continually reminded one of the cause in which the Regatta was held. There was never a dull moment from the commencement until the evening, when the Countess Drogheda presented the prizes. Apart from the competitive events, the greasy pole and other items—especially the Brothers Egbert in their old tub of a boat—provided amusement in plenty. Music was provided by an R.A.F. orchestra and the band of the London Motor Transport Section. The pageant of ships, ranging from the ancient coracle to an aerial liner of 1950, was well carried out, and the judge, Mr. Arthur Collins, awarded the "FLIGHT" Shield for the best boat to the Glendower Aviation Co., Ltd., for their model of Capt. Scott's "Discovery." The procession of decorated boats was another fine spectacle. On the sporting side interest centred in the race for the Allied Services Challenge Cup, for which seven crews had entered; the winners proved to be the New Zealand M.T. team, beating an R.A.F. crew by half a length. Some of the other results were:—Aircraft Singles: W. J. Wise (Hendon Aircraft Co.). Double Canoe Race: G. M. Linton and H. D. Baker (Canadian Forestry Dept.). 1. Service Singles: Pte. B. C. Wood (Canada). Service Doubles: Pilcher, England, and Morris (cox.) (New Zealand M.T.), 1; Marshall, Dempsey and Coulson (R.A.F.), 2. Aircraft Doubles: London Aircraft Co., 1; Adam Grimaldi and Co., 2. Nurses' Doubles: New Zealand A., 1; Royal Engineers Anti-Gas, 2. Dongola Race: R.A.F. (Chelsea). In the swimming races Air-Mech. J. Booth won the men's event and Miss Mary Brown (Adam Grimaldi and Co.) the ladies'.

THE New Zealanders were also very much in evidence at the Martinsyde sports at Woking on Saturday, when they

showed their prowess in running. In the final of the 100 yards race they filled the first three places, Pte. J. Lindsay winning in 9½ secs. with inches only separating him from the second and third, Corpl. J. O'Brien and L./Corpl. C. S. Mexted. Corpl. D. Mason, from scratch, also had a 4-yard win in the half-mile open handicap—a magnificently run race—while the quartette co-operated splendidly in winning an exciting 1-mile relay race. Apart from these events, the programme provided keen competition in many directions, and the standard set by the teams and members of the Martinsyde Recreation Club and the visitors representing other aircraft firms was high. A word of praise must be put in for the Hon. Secretaries, Messrs. F. H. Campkin, Corn and S. A. Craven and the other officials, whose thorough and far-sighted organisation enabled a long programme to be run off with very little deviation from the time-table. The heats of the closed events had been run off the previous evening, but all the same there were some fifty events on the card. The ground was admirably laid out, and although there were often several events in progress at one time there was no confusion. There was a magnificent array of prizes, useful and ornamental, a very large proportion, we were interested to note, being examples of the craftsmanship of the Goldsmiths' and Silversmiths' Co. There were concerts by the R.A.M.C. Pierrots, and members of the Royal Air Force, while the Martinsyde Orchestra and the band of the South African Infantry Brigade played programmes of music.

AFTER having to be postponed from the original date proposed, when the weather was unkind, the first annual sports of the Grahame-White Company were held at Hendon on Saturday. In a long and varied programme perhaps the outstanding features were the close racing in the 100 yards event and the cycle race.

Among the incidental enjoyments of the afternoon were the admirable playing of the Grahame-White orchestra, and the series of impromptu contests for wounded soldiers, into which they threw themselves with the greatest zest and good humour, and which included a tug-of-war, a three-legged race, and a hat-trimming contest. Mrs. Grahame-White acted as a

discriminating and expert judge in this last event, which caused hearty amusement; while Mr. Grahame-White, selling by auction the three winning hats, succeeded through his eloquence in obtaining £17 17s., which will go towards the fund for adding a new wing to the local hospital. The Grahame-White aeroplanes which circled the sports ground during the afternoon were also carrying passengers in the interests of charity.

The winners were:—

100 yards, boys, Brooks; 100 yards, men, Shaw; 100 yards, veterans, Ridge.

75 yards, ladies', Miss Sims. Tug-of-war, ladies' wood-workers.

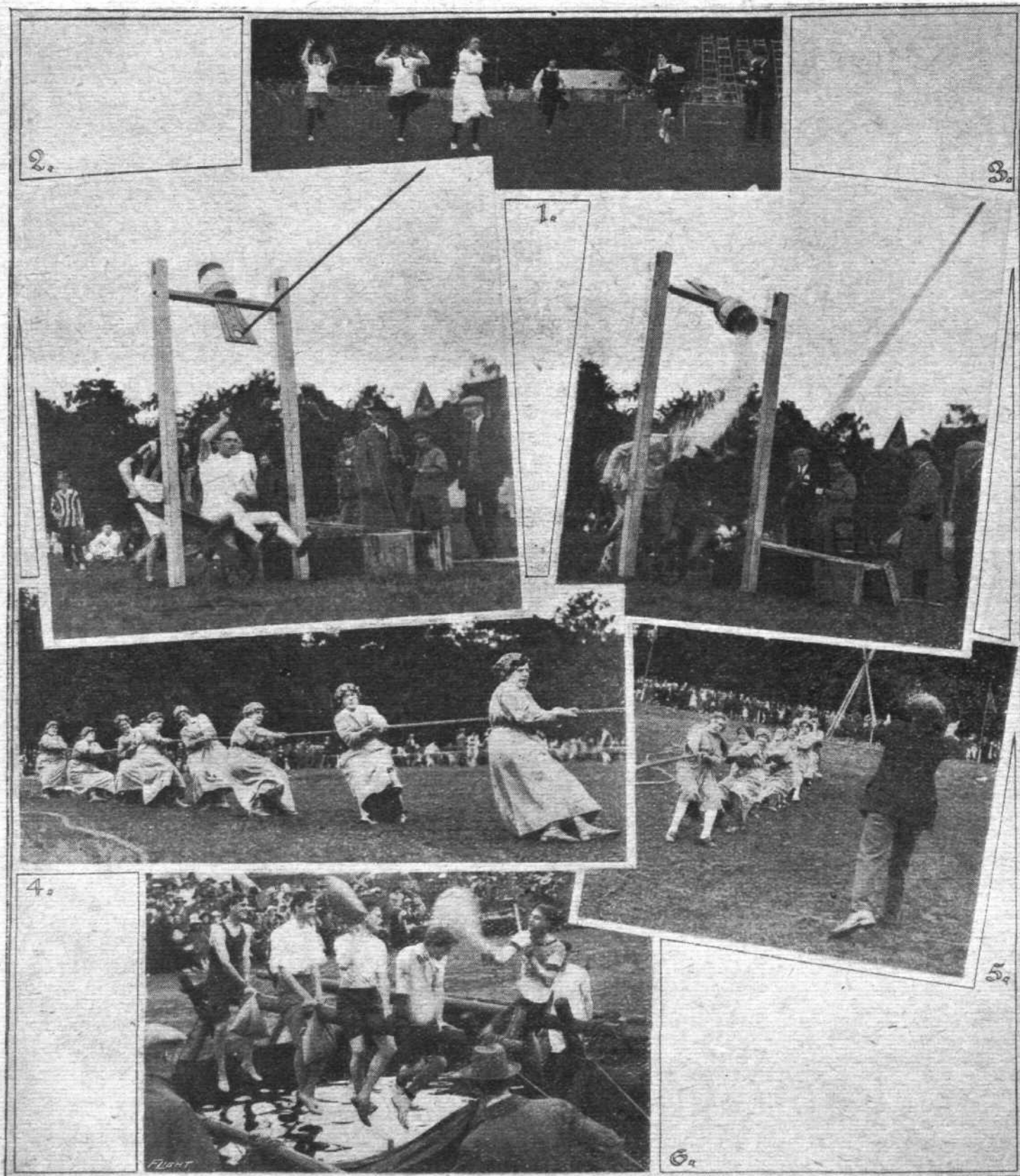
1 mile, cycle, Turner.

Mile mottram, 440 yards, Toms; 440 yards (obstacle), Hutton.

Mile walk, Taylor;  $\frac{1}{2}$  mile walk, ladies', Miss Corstorphin.

High jump, F. J. Potts. Bolster fight, Hodge.

There was a race for directors and executive, which was won by Mr. Montesole, with Mr. Hadyn-White second and Mr. Grahame-White third. In the men's tug-of-war the Erecting team beat Maintenance, but in a special pull for a



**ROYAL AIRCRAFT ESTABLISHMENT SPORTS.**—A few snaps during the sports, results of which were given in last week's issue. (1) Girls' race, the finish. (2) Tilting the bucket, a bull's eye. (3) The penalty of failure. (4 and 5) Tug-of-war: On the left, "The Cleaners," champion lady pullers; it's weight that tells; on right, the Machine Shop ladies. (6) Pillow fight; the Drawing Office gets one in the neck; in the end, the sole opposition remaining man (Works) beat the Drawing Office.



prize of £5 given by Mr. Grahame-White the positions were reversed. The prizes are to be presented by Mrs. Grahame-White at a concert to be held in the new mess-room on August 30th.

In a football match played at Fulham on Saturday on behalf of the Bulldog Club, an Army team succeeded in beating an R.A.F. eleven by three goals to one. Freeman scored for the R.A.F., and Tempest, Buchan and Cocks for the Army.

THE R.A.F. Cadets had an easy win over a Public Schools team at cricket at Kennington Oval on Saturday, declaring at 313 for seven wickets and dismissing their opponents for 128. Sergt.-Maj. Hardinge carried out his bat for 176, while Lieut. Martin scored 44 and Lieut. G. C. Pilkington 31. The top scores for the Public Schools were H. Hicks 38 and V. H. Hudson 41.

SEVERAL excellent institutions will benefit as a result of the Caudron Sports held on Saturday week. A considerable portion of the net profits arising out of the sale of the tickets and the competitors' entrance fees will be handed over as a

donation to the Y.M.C.A. fund for Huts in France and a number of employees of the British Caudron and British Anzani Company clad in grotesque costumes, collected during the afternoon for the Hendon Cottage Hospital.

There was a hat trimming competition for wounded soldiers, and the best hat was sold on the ground by auction and realised £1 12s. 6d., which sum was put in the boxes for the Hendon Cottage Hospital. The purchaser was Mr. H. C. Bathurst, the Secretary of the Company. The hat was afterwards presented by him for sale again and this time the purchaser was Mr. A. M. Ramsay at £3. Mr. Ramsay thereupon used the hat as a collecting box in aid of St. Dunstan's Hospital for Blinded Soldiers and Sailors, the collection amounting to £7 10s. These two sums, viz., £10 10s., have been sent to that Institution. The hat was finally presented to Mr. G. J. Furness as a memento of the occasion.

Lack of space does not permit of the full results of the sports being printed, but the winners of the open events were:— 60 Yards (Ladies), Miss White (Darracq); 1 Mile, Hall (Grahame-White); 100 Yards, Nicholls (Handley Page); 880 Yards Handicap, Hall; 220 Yards Handicap, Nicholls; 1 Mile Relay, Erectors.



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THE MARTINSYDE SPORTS AT WOKING.—1. Ladies' Tug-of-War. The Machine Shop team which won. 2. Half way round in the Half-Mile Open Handicap. 3. Start for the 100 Yards Open. 4. A popular side-show. 5. Mr. and Mrs. Martin and Mr. Andre, who took the keenest interest in all the events. 6. Winner of Ladies' 100 Yards finishing. 7. Finish of 880 Yards Open Handicap. 8. Firemen's Race. Fisher wins by a button. 9. T. Heath secures the One-Mile Walk.